L 11141-66
ACC NR: AP6000783 SOURCE CODE: UR/0240/65/000/009/0114/0114

AUTHOR: Ravinskaya, F. S.; Gratsianskaya, L. V.

ORG: City Sanitation Epidemic Station (Gorodskaya sanepidstantsiya); Sanitation Epidemic Station of Lenin Rayon, Leningrad (sanepidstantsiya Leninskogo rayona)

TITLE: Working health conditions and incidence of disease of textile mill workers

SOURCE: Gigiyena i sanitariya, no. 9, 1965, 114

TOPIC TAGS: industrial medicine, textile industry

ABSTRACT: The authors studied three groups of workers at a textile mill to determine the effects of unfavorable working conditions on disease incidence. The first group of workers was exposed to excessive dust; the second group was exposed to an insignificant amount of dust, a moderate amount of noise, increased air humidity, and physical strain (carrying loads of 8 to 12 kg); and, the third group was exposed to high room temperature and intensive noise. In each group there were more than 100 persons, mostly women, with no significant differences in age or length of employment. The authors found the highest incidence of disease with the highest loss of working days in the third

UDC: 613.6:677.022

Card 1/2

L 11141-66
ACC NR: AP6000783

group. This group had the highest number of angina cases and acute diseases of the respiratory passages and lungs, and this is attributed to high room temperature. A high incidence of hypertonic diseases and neuroses was also found and is attributed to intensive noise. The first group had the highest incidence of respiratory organ chronic diseases and skin diseases, and this is attributed to the excessive dust. The authors compared the data for the textile workers with data for garment workers in sewing plants where most of the unfavorable working conditions are absent and the workers are predominantly women. For the textile mill workers, the incidence of heart disease was 3 times higher, the incidence of ulcers was 6 times higher, and the incidence of pleuritis, bronchial, and hypertonic diseases was 2 times higher. The authors conclude that unfavorable working conditions increase the overall incidence of disease and certain nosological forms, and have made specific recommendations for improving conditions at the textile mill. Orig. art. has: none.

SUB CODE: 06/ SUBM DATE: 00/ ORIG REF: 000/ OTH REF: 000

OC

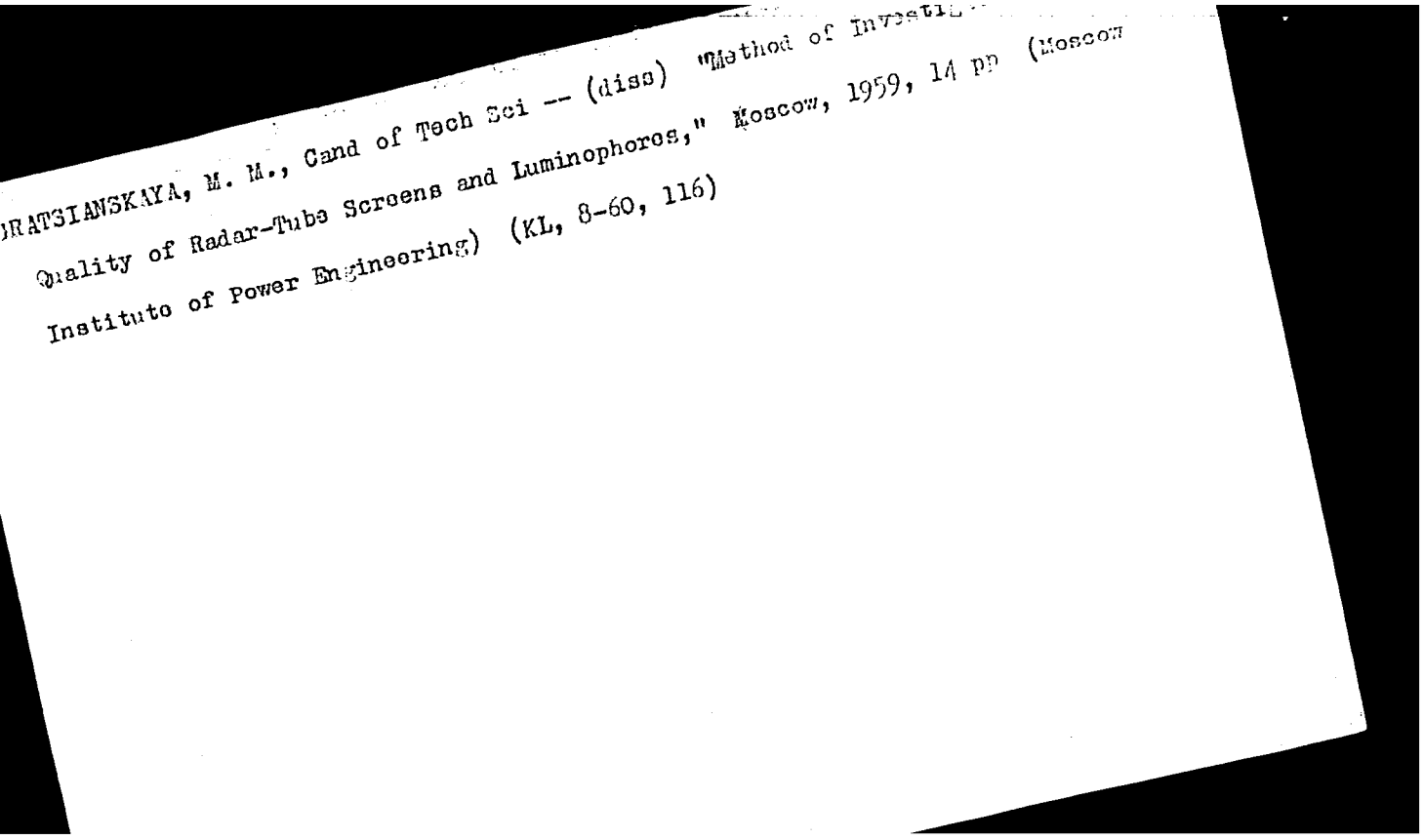
Card 2/2

GRATSIANSKAYA, M.M.

Visibility of signals on the screen of cathode-ray tubes. Nauch. dokl.vys.shkoly; radiotekh.i elektron. no.4:189-200 '58. (MIRA 12:6)

1. Kafedra elektronnykh priborov Moskovskogo energeticheskogo instituta.

(Cathode ray tubes)



GRATSIANSKAYA, M. M., Cand of Tech Sci -- (diss) "Method of Investig...
Quality of Radar-Tube Screens and Luminophores," Moscow, 1959, 14 pp (Moscow
Institute of Power Engineering) (KL, 8-60, 116)

GRATSIANSKAYA, M.M.

Storage characteristics of cascade screens and calculation of the visibility of the signal. Izv.vys.ucheb.zav.; radiofiz. 2 no.5:759-765 '59. (MIRA 13:5)

1. Moskovskiy energeticheskiy institut.
(Television--Picture tubes) (Radio direction finders)

S/194/62/000/002/040/096
D201/D301

9;4150

AUTHOR: Gratsianskaya, M. M.

TITLE: Investigating the signal visibility on CRT's with brightness intensity markers

PERIODICAL: Referativnyy zhurnal, Avtomatika i radioelektronika, no. 2, 1962, abstract 2-3-87K (Tr. Mosk. energ. in-ta, 1961, no. 34, 280-294)

TEXT: Experimental and calculated curves of visibility (V) of a signal are given for type 13ЛМ(1ZLM) CRT's with different screen characteristics. The agreement between experimental and calculated visibility curves proves the correctness of the equation relating the CRT screen characteristic, having brightness intensity markers with the values determining the signal V at the screen. The most suitable means of increasing the signal V is increasing the slope of the CRT modulation characteristic. The arrangement used for measurements simulated a circular scan CRT, operating with brightness modulation. A detailed description of the measurement procedure is given. [Abstracter's note: Complete translation.]

Card 1/1

S/194/61/000/011/042/070
D256/D302

AUTHORS: Gratsianskaya, M.M. and Boyko, V.A.

TITLE: Some problems in the application of photo-multiplier tubes (of Soviet-manufacture)

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 11, 1961, 26, abstract 11 G177 (Tr. Mosk. energ. in-ta, 1961, no. 34, 295-306)

TEXT: Results are presented of investigating the photo-multiplier tubes: ФЭУ -19 (FEU-19), ФЭУ -32 (FEU-32) and ФЭУ -34 (FEU-34) used for brightness control on the screen of an electron-beam tube. A non-linear potential divider was chosen in order to reduce non-linear distortions at large output currents of the photo-multiplier, resulting in a better linearity of the light characteristic at high current and comparing favorably with figures obtained when the recommended voltages were used. From the performed investigations methods were found for improving the photo-multiplier stabil-

Card 1/2

S/194/61/000/011/042/070
D256/D302

Some problems in the application...

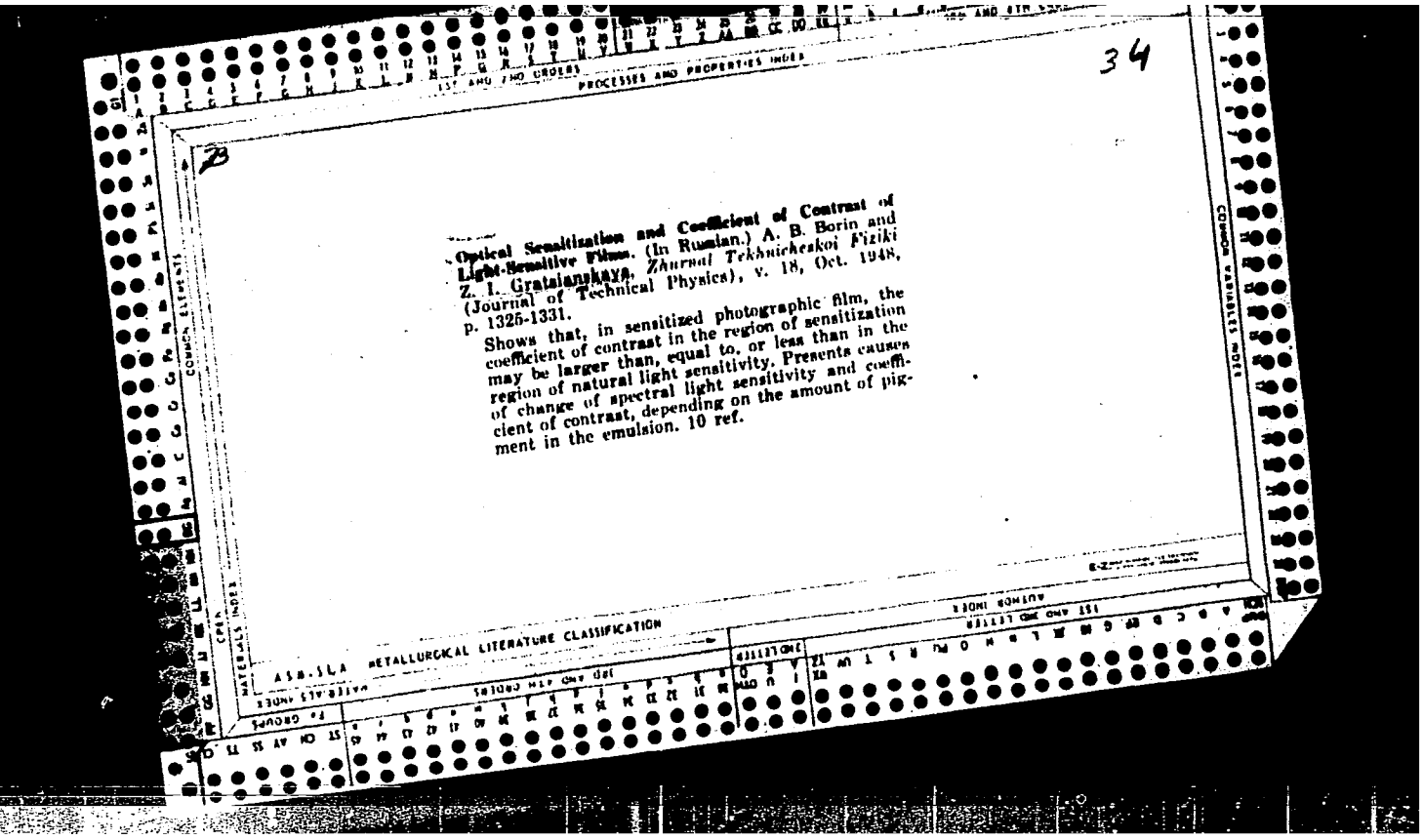
ity by reducing the effect of the tube [illegible]ue. 2 references.
[Abstracter's note: Complete translatio...]

Card 2/2

GRATSIANSKAYA, N. N.; LISTOVA, N. M.

"pri uchastii O. A. GANTSKOY) (SSSR). Voprosy tipologii traditsionnogo zhilishcha Tsentral'noy i Yugo-Vostochnoy Evropy."

report submitted for 7th Intl Cong, Anthropological & Ethnological Sciences, Moscow, 3-10 Aug 64.



34

Optical Sensitization and Coefficient of Contrast of Light-Sensitive Films. (In Russian.) A. B. Borin and Z. I. Gratsianskaya. *Zhurnal Tekhnicheskoi Fiziki* (Journal of Technical Physics), v. 18, Oct. 1948, p. 1325-1331.

Shows that, in sensitized photographic film, the coefficient of contrast in the region of sensitization may be larger than, equal to, or less than in the region of natural light sensitivity. Presents causes of change of spectral light sensitivity and coefficient of contrast, depending on the amount of pigment in the emulsion. 10 ref.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

GRATSIANSKAYA, Z. I.

USSR.

The influence of concentration of bromide and hydroxyl ions on the photographic properties of emulsions. A. V. Borin, Z. I. Gratsianskaya, and R. A. Polchishchalova. J. Appl. [redacted] 6, 369-77(1953)(Engl. translation).—See C.A. 48, 2190e. H. L. H.

GRATSIANSKAYA, Z. I.

USSR/Chemistry - Photographic

"The Influence of the Concentration of Bromine Ions and Hydroxyl Ions on the Photographic Properties of an Emulsion," A. V. Borin, Z. I. Gratsianskaya and R. A. Podchishchalova

Zhur Prik Khim, Vol 26, No 7, pp 708-720, 1953

Raising the concn of KBr above the equiv prevents haze formation during chemical development. The centers that are formed during phys ripening participate in the formation of photographic properties of the emulsion. A change in the conc of Br and OH

271T23

ions at the start of chem development has a significant effect on the contrast coef. As the concn of the above ions increases, the contrast coef grows. Raising the concn of Br ions at the start of chem development improves the sensitizing effect of dyestuff in the emulsion. Observed the disappearance of the desensitizing action of H-ions on the light-sensitive layer that is optically sensitized with disubstituted thiocarbocyanine dyes.

271T23

GRATSIANSKAYA, Z. I.

GRATSIANSKAYA, Z. I. "The Effect of Surface-active Substances on the Process of Optical Sensitization of Photographic Emulsions." Min Culture USSR. Leningrad Inst of Cinema Engineers. Leningrad, 1956. (Dissertation for the Degree of Candidate in Technical Science)

So: Knizhnaya Letopis', No. 19, 1956.

GOROKHOVSKIY, Yu.N.; GRATSIANSKAYA, Z.I.

Research on the optical sensitizing of photographic emulsions. Part 7: Influence of the color-forming components of color development on the process of optical sensitizing. Zhur.nauchn.i prikl.fot.i kin. 2 no.6:421-431 N-D '57. (MIRA 10:12)

1. Leningradskiy institut kinoinzhenerov.
(Color photography) (Photographic sensitometry)

GRATSIANSKAYA, Z.I.; SIDORENKOVA, P.T.

Effect of light diffusion in the top layer of a multilayer film on the resolving power of the underlaying layer. Usp. nauch. fot. 8:29-34 '62. (MIRA 17:7)

S/058/63/000/003/053/104
A062/A101

AUTHORS: Barro, M. I., Gorokhovskiy, Yu. N., Gratsianskaya, Z. I., Pruss, P. Kh.

TITLE: Dependence of the resolving power of multilayer color films on the disposition sequence of the layers

PERIODICAL: Referativnyy zhurnal, Fizika, no. 3, 1963, 88, abstract 3D594 ("Uspekhi nauchn. fotogr.", 1962, v. 8, 21 - 28)

TEXT: A concept is introduced for a resolvometric balancing of three elementary images in the final positive color image. Requirements are formulated for the structure of a pair of multilayer films forming a set, in which the resulting image can attain the highest resolution. A study was made on the resolvometric properties of 7 sets of multilayer films with different sequences of disposition of the layers, and it is shown that fulfillment of the presented demands brings about effectively a higher resolution and a resolvometric balancing of the set. The resolving and distinguishing powers of two negative multilayer materials and the positive images obtained from them are compared. It is

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shown that these quantities are approximately proportional to each other and that, consequently, the quality of geometric reproduction of two-dimensional color objects can be, at least in a first approximation, characterized by the magnitude of the resolving power.

[Abstracter's note: Complete translation]

BARRO, M.I.; GOROKHOVSKIY, Yu.N.; GRATSIANSKAYA, Z.I.; PRUSS, P.Kh.

Dependence of the resolving power of multilayer color films on the sequential arrangement of the layers. Usp. nauch. fot. 8: 21-28 '62. (MIRA 17:7)

GRATSIANSKIY, A.A.

Form of schizophrenia resistant to aminazine therapy [with summary in French]. Zhur.nevr. i psikh. 59 no.2:172-176 '59. (MIRA 12:4)

1. Kafedra psikhiatrii (zav. - prof. A.V. Snezhnevskiy) TSentral'nogo instituta usovershenstvovaniya vrachey, Moskva.
(CHLORPROMAZINE, ther. use,
schizophrenia, resist. forms (Rus))
(SCHIZOPHRENIA, ther.
chlorpromazine, resist. forms (Rus))

GRATSIANSKIY, A. N.

"Yugoslavia (Physicogeographical Characteristics)."

Thesis for degree of Cand. Geographical Sci. Sub 20 Jun 50, Moscow Order of Lenin State U imeni M. V. Lomonosov

Summary 71, 4 Sep 52, Dissertations Presented for Degrees in Science and Engineering in Moscow in 1950. From Vechernyaya Moskva, Jan-Dec 1950.

[redacted]

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621.01
.G72

GRATSIANSKIY, ANDREY NIKOLAYEVICH

Priroda Yugoslavii (Yugoslavia Nature) Moskva, Geografigz, 1955.

241 p. illus., maps, tables.

S/073/62/028/009/005/011
A057/A126

AUTHORS: Vdovenko, I. D., Gratsianskiy, I. N.

TITLE: Corrosion resistance of indium, tin, and indium-tin alloys in the presence of surface-active substances

PERIODICAL: Ukrainskiy khimicheskiy zhurnal, v. 28, no. 9, 1962, 1069 - 1072

TEXT: At the Institut obshchey i neorganicheskoy khimii AN USSR (Institute of General and Inorganic Chemistry AS UkrSSR) corrosion properties of indium, tin, and their alloys were studied at room temperature in 60% H_2SO_4 in the presence of the surface-active substances heptyl-octylamine, decyl-dodecylamine mixtures, or octadecylamine at various concentrations (0.094 and 0.265 g/l). Alloys of the following composition were studied (in at%): 99.0, 97.0, 87.5, 75.0, 62.5, 50.0, 37.5, 20.0, 3.0, 1.0. The tests were carried out with disc shaped samples 80 - 100 μ thick, measuring during 12 days the stationary potential, and the corrosion rate was determined gravimetrically. The electrode potentials shifted towards negative values after the addition of the amines, apparently due to the formation of an inhibiting film which affects the cathodic processes. The

Card 1/2

GATSIANSKIY, I. N.

GATSIANSKIY, I. N. -- "SOME PROBLEMS OF THE THEORY AND THE CALCULATION OF ALTERNATING-CURRENT MEASURING ELEMENTS." SUB 6 JUN 52, MOSCOW ORDER OF LENIN POWER ENGINEERING INST IMENI V. M. MOLOTOV (DISSERTATION FOR THE DEGREE OF CANDIDATE IN TECHNICAL SCIENCES)

SO: VECHERNAYA MOSKVA, JANUARY-DECEMBER 1952

GRATSIANSKIY, I.N., kand.tekhn. nauk.

Active RC differentiator. Trudy MEI no.13:32-41 '53. (MIRA 11:4)

1. Moskovskiy energeticheskiy institut imeni V.M. Molotova, Kafedra elektropriborostroyeniya.
(Calculating machines)

SOV/112-57-6-12890

Translation from: Referativnyy zhurnal. Elektrotekhnika, 1957, Nr 6, p 177 (USSR)

AUTHOR: Gratsianskiy, I. N.

TITLE: Fundamental Formulae for Designing Block Circuits of Computer Amplifiers (Osnovnyye formuly rascheta blok-skhem reshayushchikh usiliteley)

PERIODICAL: Tr. Mosk. Energ. in-ta, 1956, Nr 18, pp 297-309

ABSTRACT: A general block circuit is presented, as well as a table of specific block circuits of computer amplifiers that can perform scale conversion, inversion, differentiation, summation, and combined differentiation or integration with simultaneous summation. Design formulae are presented for the transmission factor, input and output impedances of a scale amplifier operating with a negative feedback, a differentiator, an integrator, and an adder; sinusoidal waveshape of the input voltage is assumed. An angular-error formula is also given for the integrating and differentiating amplifiers. Amplifier errors due to DC amplifier zero-point drift are indicated. A procedure for designing differentiator and integrator components is suggested.

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SOV/112-57-6-12890

Fundamental Formulae for Designing Block Circuits of Computer Amplifiers

Some hints are given on the selection and calculation of components of a negative feedback amplifier. A block circuit is described of an amplifier that has a low zero-point drift secured by an additional amplifier with a vibropack, and a method is offered for calculating the amplification factor and the zero-point drift voltage for a low-drift amplifier. 4 illustrations, 2 tables. Bibliography: 7 items.

I.M.V.

Card 2/2

GRATSINSKIY, I.N.

Modulation transmitters used in controlling cathode ray tubes.
Izm. tekh. no.2:74-77 Mr-Ap '57. (MLRA 10:6)
(Cathode ray tubes) (Electronic measurements)

GRATSIANSKIY, Igor' Nikolayevich, kand. tekhn.nauk, dots.;
KUTYASHOVA, Ye.M., kand. tekhn. nauk, red.

[Electronic measuring devices; abstract of lectures] Elektronnye izmeritel'nye pribory; konspekt lektsii. Moskva, Mosk. energ. in-t. Pt.3. 1960. 143 p. (MIRA 16:7)
(Electronic measurements)

BYKOV, Mikhail Aleksandrovich; GRATSIANSKIY, Igor' Nikolayevich; KIFER, Isaak Iosifovich; KUTYASHOVA, Yelena Mikhaylovna; LEVIN, Mark Iosifovich; PRYTKOV, Vladimir Tikhonovich; STREKALOV, Ivan Alekseyevich; TALITSKIY, Aleksandr Vasil'yevich; KHARCHENKO, Roman Romanovich; SHUMILOVSKIY, Nikolay Nikolayevich; KASATKIN, A.S., red.; VORONIN, K.P., tekhn.red.

[Course on electric measurements] Kurs elektricheskikh izmerenii. Pod red. V.T.Prytkova i A.V.Talitskogo. Moskva, Gos.energ.izd-vo. Pt.1. 1960. 479 p. Pt.2. 1960. 430 p. (MIRA 13:10)
(Electric measurements)

S/115/60/000/02/015/031
D002/003

AUTHOR: Gratsianskiy, I.N.

TITLE: A Small-Size Galvanometric Amplifier on Semi-Conductive Devices

PERIODICAL: Izmeritel'naya tekhnika, 1960, Nr 2, pp 26-29 (USSR)

ABSTRACT: The galvanometeric amplifiers, "GU" are used as attachments for increasing the sensitivity of measuring devices, for instance, of vibrational oscillographs. The general theory of amplifiers ("GU") has already been treated previously [Ref 1-3]. R.R. Kharchenko [Ref 4] discussed the intercoupling problem of "GU". The present article contains a description of a "GU" model consisting of miniature units shown in a block diagram (Figure 1): The miniature "GB" galvanometer, designed by Ye.S. Borisevich [Ref 5], a sulphur-lead photoresistance of special design of the VEI imeni V.I. Lenina (VEI imeni V.I. Lenin), and a d.c. amplifier on transistors. The

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S/115/60/000/02/015/031
D002/003

A Small-Size Galvanometric Amplifier on Semi-Conductive Devices

design and performance of the unit are explained. The family of amplitude characteristics (Figure 4), and the amplitude-frequency characteristics (Figure 5), are shown in graphs. The amplitude characteristics are linear with an error not exceeding 1%. It is concluded that it is possible to construct multi-channel miniature galvanometric amplifiers on semi-conductive devices. Engineer L.M. Sukhorukova took part in the experimental work. There are 3 diagrams, 2 tables, 4 graphs, and 6 Soviet references.

Card 2/2

GRATSIANSKIY, L. N., (Grad Stud)

Dissertation: "Measures Against Continuous Chips in Cutting Steel on High-Speed Lathes." Cand Tech Sci, Moscow Order of Lenin Aviation Inst imeni Sergo Ordzhonikidze, 22 Jun 54. (Vechernyaya Moskva, Moscow, 11 Jun 54)

SO: SUM 318, 23 Dec 1954

GRATSIANSKIY, L.N., kand.tekhn.nauk

Direction of the movement of chips in free turning of steel.
Izv. vys.ucheb.zav.; mashinostr. no.8:110-114 '60.
(MIRA 13:9)

1. Moskovskiy aviatsionnyy institut.
(Turning)

GRATSIANSKIY, L.N.

Using chip-wringling devices. Mashinostroitel' no.10:30 '60.
(MIRA 13:10)
(Metal cutting)

S/145/60/000/008/013/014/XX
D211/D304

AUTHOR: Gratsianskiy, L.N., Candidate of Technical Sciences

TITLE: The direction of shaving flow during the free turning of steels

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Mashinostroyeniye, no. 8, 1960, 110 - 114

TEXT: The article deals with the characteristics of shaving formation of steels 45 and 18ХНВА (18KhNVA). Cylindrical and tubular specimens were turned on a 1616 type lathe using tools with a Т15К6 (T15K6) hard alloy tip. The cutting speed was 125 m/min and the feed was 0.21 mm per revolution. The angle between the cutting edge and the track left by the shaving on the front surface of the cutting tool, covered by chalk paste was measured. The removed ribbons of shavings were annealed, unwound and flattened and the radius of the plane coil obtained was measured. To study shaving formation under various conditions a series of 4 experiments were carried out. The author concludes that with tools having the angles $\varphi = 90^{\circ}$ and

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The direction of shaving flow ...

$\lambda = 0^{\circ}$ [Abstractor's note: φ and λ not defined] the shaving moves at a right angle to the cutting edge. If $\varphi = 90^{\circ}$ and $\lambda \neq 0$ the shaving moves at an angle $\omega = 90^{\circ} \pm \lambda$ with respect to the cutting edge. If $\varphi \neq 90^{\circ}$ and $\lambda \neq 0^{\circ}$ the shaving has not the form of a straight ribbon but that of the surface of truncated cone. There are 6 figures and 3 Soviet-bloc references.

ASSOCIATION: Moskovskiy aviatsionnyy institut (Moscow Institute of Aviation)

SUBMITTED: March 13, 1959

Card 2/2

GRATSIANSKIY, M. N.

"Fundamental principles of planning the aprons of low pressure dams."

Dissertation for Candidate of Technical Sciences, All-Union Sci. Res. Inst. of Water supply, Sewerage, Hydroengineering Construction and Engineering Hydrogeology." (VODGEO)

Subject: Hydroengineering building and construction.
Gidrotekhnicheskoye, stroitel'stvo, 12, 1946.

GRATSIANSKIY, M.N., kandidat tekhnicheskikh nauk, dotsent.

Characteristics of investigating and designing low pressure dams under conditions where the river bottoms are inundated. Sbor. trud.MISI no.9:41-55 '55. (MLRA 10:3)
(Dams)

GRATSYANSKIY, M.N.

3271. Gratsyanskiĭ, M. N., Wave action on overflow dams (in Russian), *Gidrotekh. Stroit.* 24, 7, 31-35, 1955.

Measurements were made on a 1/50 scale model of the Kuybitschev dam for the influence of traveling waves upstream of the dam. The shape and velocity of these waves are argued to be constant, the transport over the dams is shown to change only by the change of water level upstream, the flow velocity is not changed. If the wave amplitude is of the same order as the water height above the dam, the transport over the dam for rising wav is greatly different from that for falling wave. Semi-empirical formulas are given (from experiments) for transport in presence of waves (dimensionless by transport without waves) expressed in water-wave height upstream of the dam, neglecting kinetic energy. Mean coefficient of transport checks well with experiments. From the transport, water height downstream of the dam can be calculated by Bernoulli's law and the momentum equation.

It is recommended to take account of the effects of these wind-generated waves upstream and to compare them with model experiments in the construction of new dams.

R. Timman, Holland

SOV/124-58-10-11170

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 10, p 66 (USSR)

AUTHORS: Gratsianskiy, M.N., Kulygin, B.A.

TITLE: Wave Action on Overflow Dams of Practical Shape (Deystviye voln na vodoslivnyye plotiny prakticheskogo profilya)

PERIODICAL: Sb. Tr. Mosk. inzh.-stroit. in-t, 1957, Nr 20, pp 149-168

ABSTRACT: The influence of waviness in the head-water basin on the water discharge rate through the spillway is described according to experimental investigations carried out under variable head conditions and different spillway flow into the tail-water basin. It is shown that maximum wave pressure upon the spillway gate obtains when the orifice is fully closed, viz., when the gate is lowered completely. Under these conditions the wave pressure can surpass by 50 or more percent the pressure existing under calm-surface conditions. To prevent icing of the gate in winter due to waves spilling over the gate it is recommended that the top of the gate and the height of areas that should not be flooded be raised above the calm-surface level by a height equal to the sum of the wave height, the reach of the waves, and the rise of the mean wave line. Spillway discharge

Card 1/2

per second under wavy conditions can exceed the maximum calculated discharge by as much as 60%. Even under minimum gate opening the waves penetrate into the tail-water basin and impair considerably the energy dissipation of the flow and the conditions for the approach and mooring of ships. To minimize the wave pressure on the gates and the waviness in the tail-water basin, specially designed energy dissipators are recommended, such as pneumatic, solid, and ribbed visor (surface-skimming) types.

B. A. Pyshkin

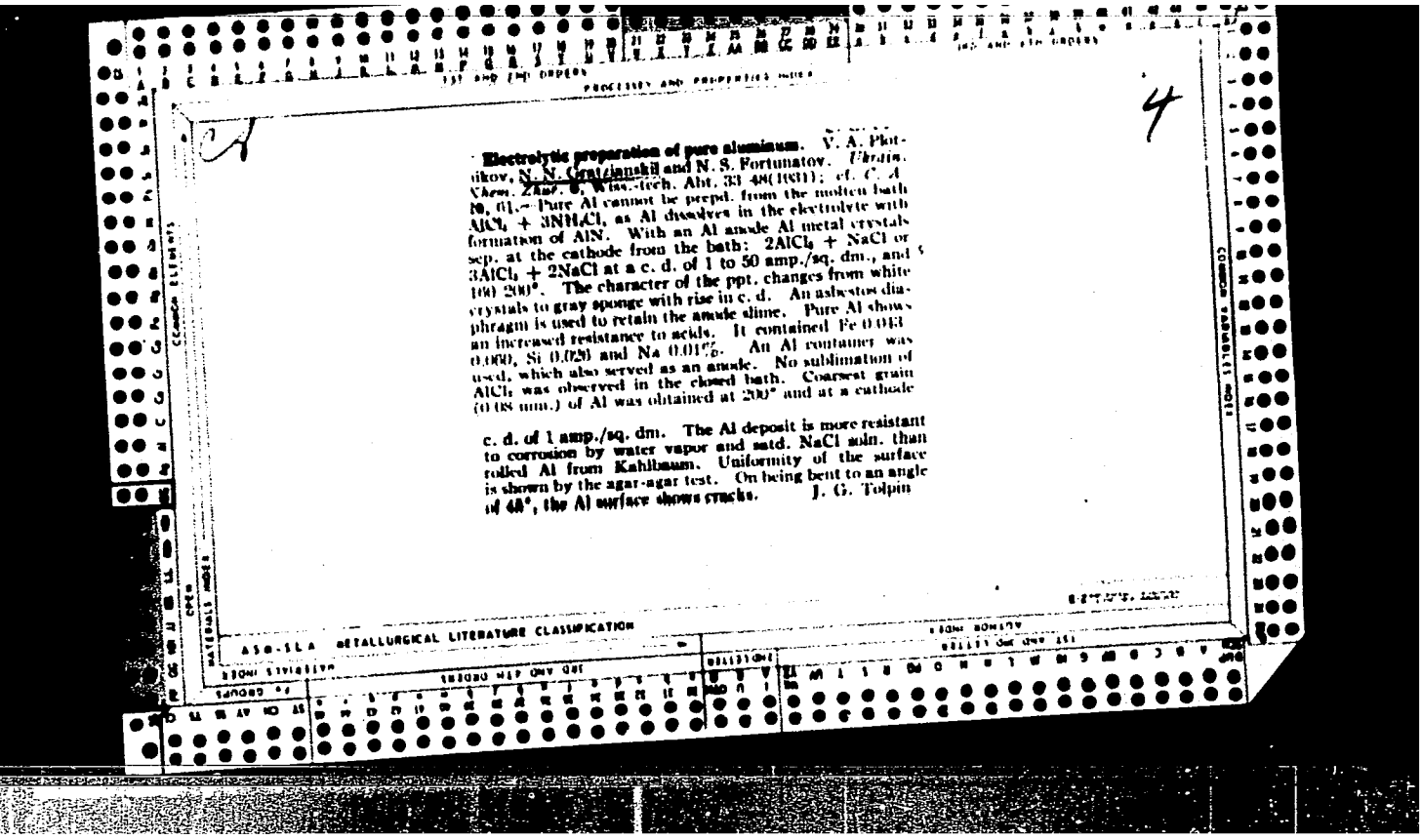
GRATSIANSKIY, Mikhail Nikolayevich, dots., kand. tekhn.nauk;
ALEKSANDROVSKIY, Yuriy Vladimirovich, dots., kand. tekhn. nauk;
IZOTOV, B.S., dots., retsenzent; SUROV, I.Ye., inzh., retsenzent; BONDAR', F.I., inzh., retsenzent; SAMSONOVA, M.T., red.;
VORONINA, R.K., tekhn. red.

[Hydrology and hydraulic structures] Gidrologiia i gidrotekhnicheskie sooruzheniia. Moskva, Gos. izd-vo "Vysshaia shkola," 1961. 351 p. (MIRA 15:3)

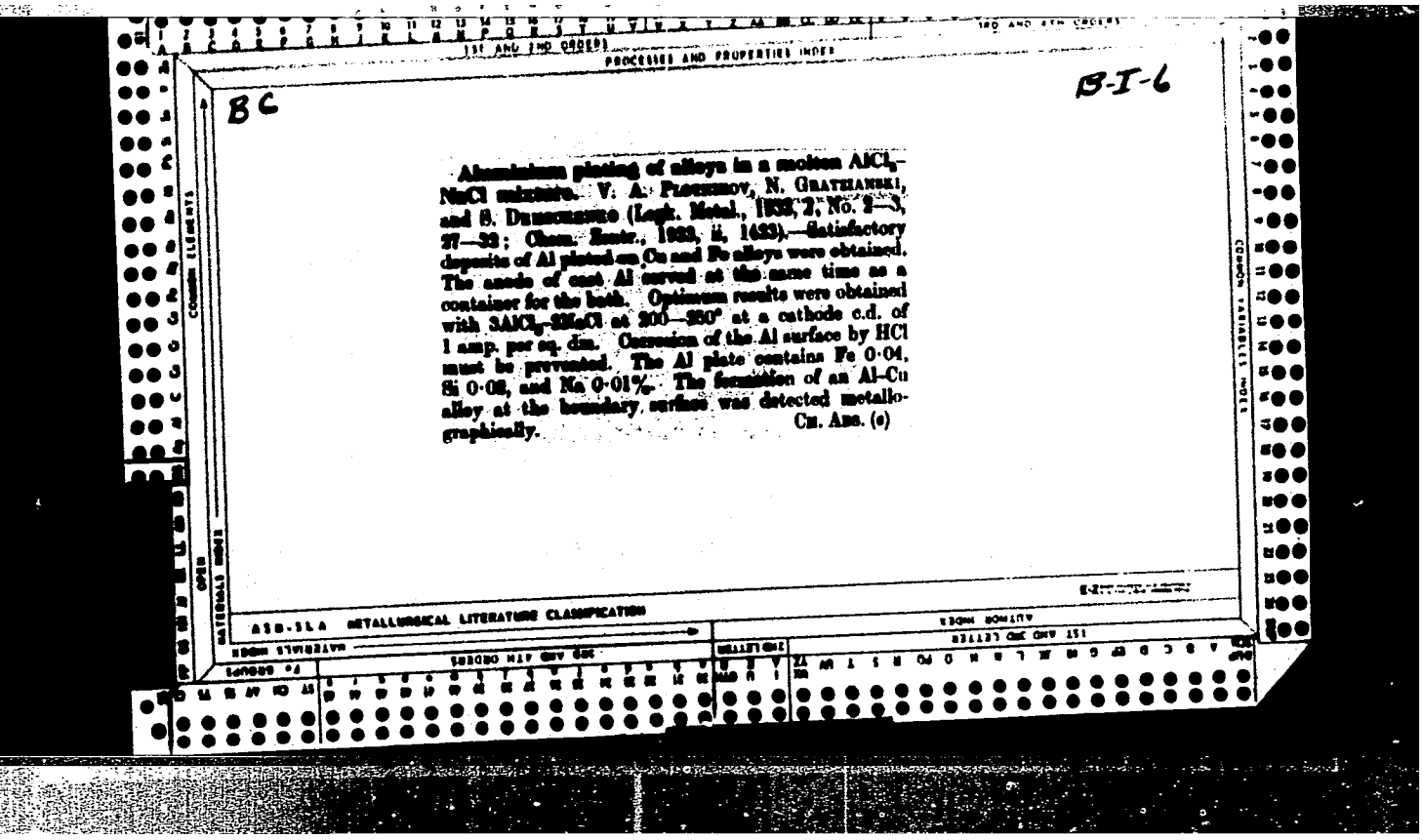
1. Kafedra gorodskogo stroitel'stva i khozyaystva Leningradskogo inzhenerno-stroitel'nogo instituta (for Izotov).
(Hydraulic engineering)

GRATSIANSKIY, M.N., kand. tekhn. nauk; KOSTOMAROV, V.M., kand. tekhn. nauk; ALEKSANDROVSKIY, Yu.V., kand. tekhn. nauk; KARAGODIN, V.L., inzh.; KARAGODIN, A.L., inzh.; ANUFRIYEV, V.Ye., kand. tekhn. nauk; KURDYUMOV, M.D., inzh.; DZHUNKOVSKIY, N.N., doktor tekhn. nauk, prof.; ABRAMOV, S.K., kand. tekhn. nauk; KEDROV, V.S., kand. tekhn. nauk; GIBSHMAN, Ye.Ye., prof., red.; YEGOROV, P.A., inzh., red.; VARGANOVA, A.N., red. izd-va; LELYUKHIN, A.A., tekhn. red.

[Manual for the design, construction and operation of urgan roads, bridges and hydrotechnical structures] Spravochnik po proektirovaniiu, stroitel'stvu i ekspluatatsii gorodskikh dorog, mostov i gidrotekhnicheskikh sooruzhenii. Red. kol. E.E. Gibshan, N.N.Dzhunkovskii, P.A.Egorov. Moskva, Izd-vo M-va kommun.khoz. RSFSR. Vol.2. [Hydrotechnical structures] Gidrotekhnicheskie sooruzheniia. Red. toma: N.N.Dzhunkovskii, M.D.Kurdiumov. 1961. 706 p. (MIRA 15:3)
(Hydraulics) (Hydraulic engineering)



Electrolytic preparation of pure aluminum. V. A. Plotnikov, N. N. Gratzianskii and N. S. Fortunatov. *Ukrain. Khem. Zhur.* 6, Wiss.-tech. Abt. 33 48(1931); cf. *C. A.* 30, 61.— Pure Al cannot be prepd. from the molten bath $AlCl_3 + 3NH_4Cl$, as Al dissolves in the electrolyte with formation of AlN. With an Al anode Al metal crystals sep. at the cathode from the bath: $2AlCl_3 + NaCl$ or $3AlCl_3 + 2NaCl$ at a c. d. of 1 to 50 amp./sq. dm., and 100–200°. The character of the ppt. changes from white crystals to gray sponge with rise in c. d. An asbestos diaphragm is used to retain the anode slime. Pure Al shows an increased resistance to acids. It contained Fe 0.013, 0.009, Si 0.029 and Na 0.01%. An Al container was used, which also served as an anode. No sublimation of $AlCl_3$ was observed in the closed bath. Coarsest grain (0.08 mm.) of Al was obtained at 200° and at a cathode c. d. of 1 amp./sq. dm. The Al deposit is more resistant to corrosion by water vapor and satd. NaCl soln. than rolled Al from Kahlbaum. Uniformity of the surface is shown by the agar-agar test. On being bent to an angle of 45°, the Al surface shows cracks. J. G. Tolpin

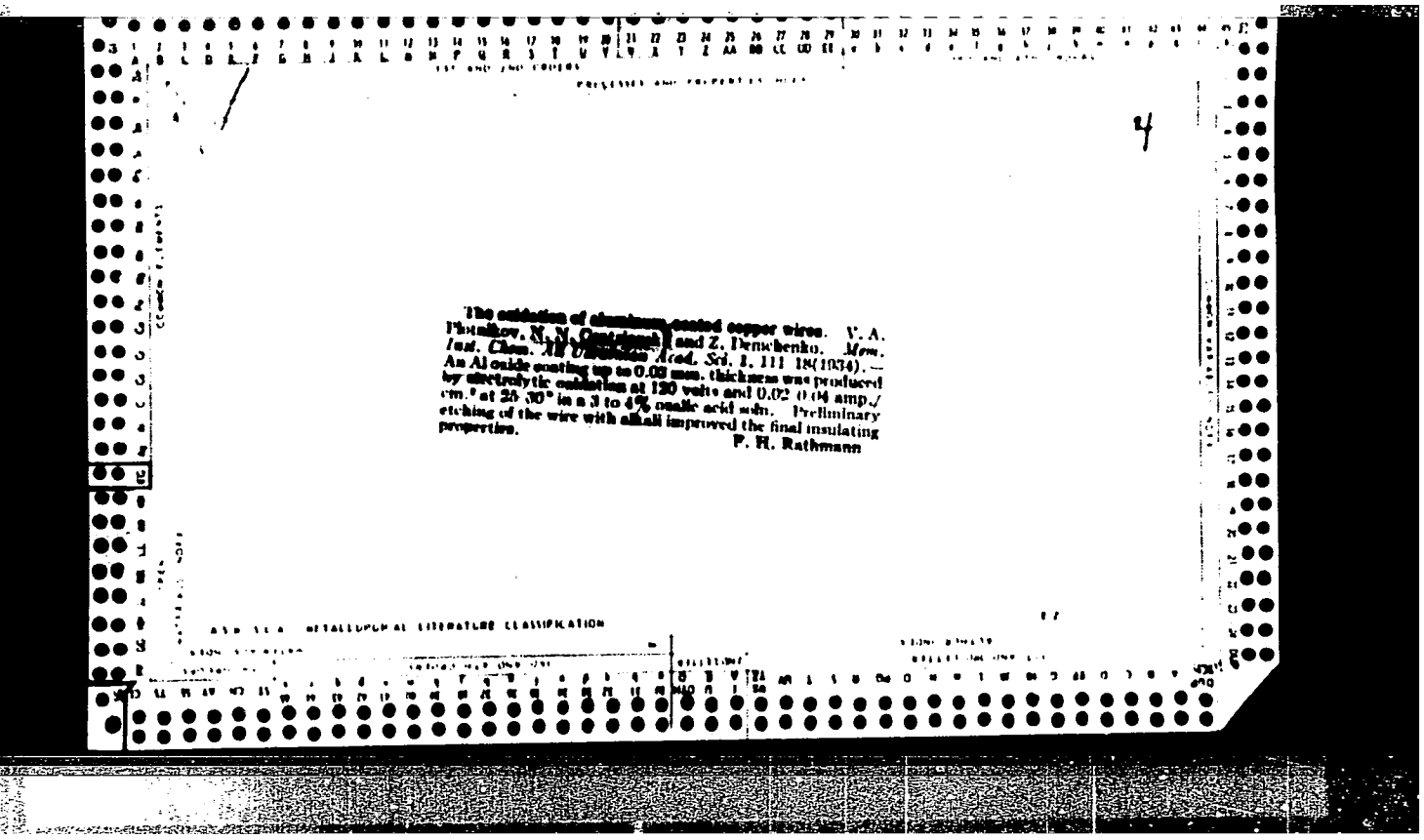


BC

B-I-6

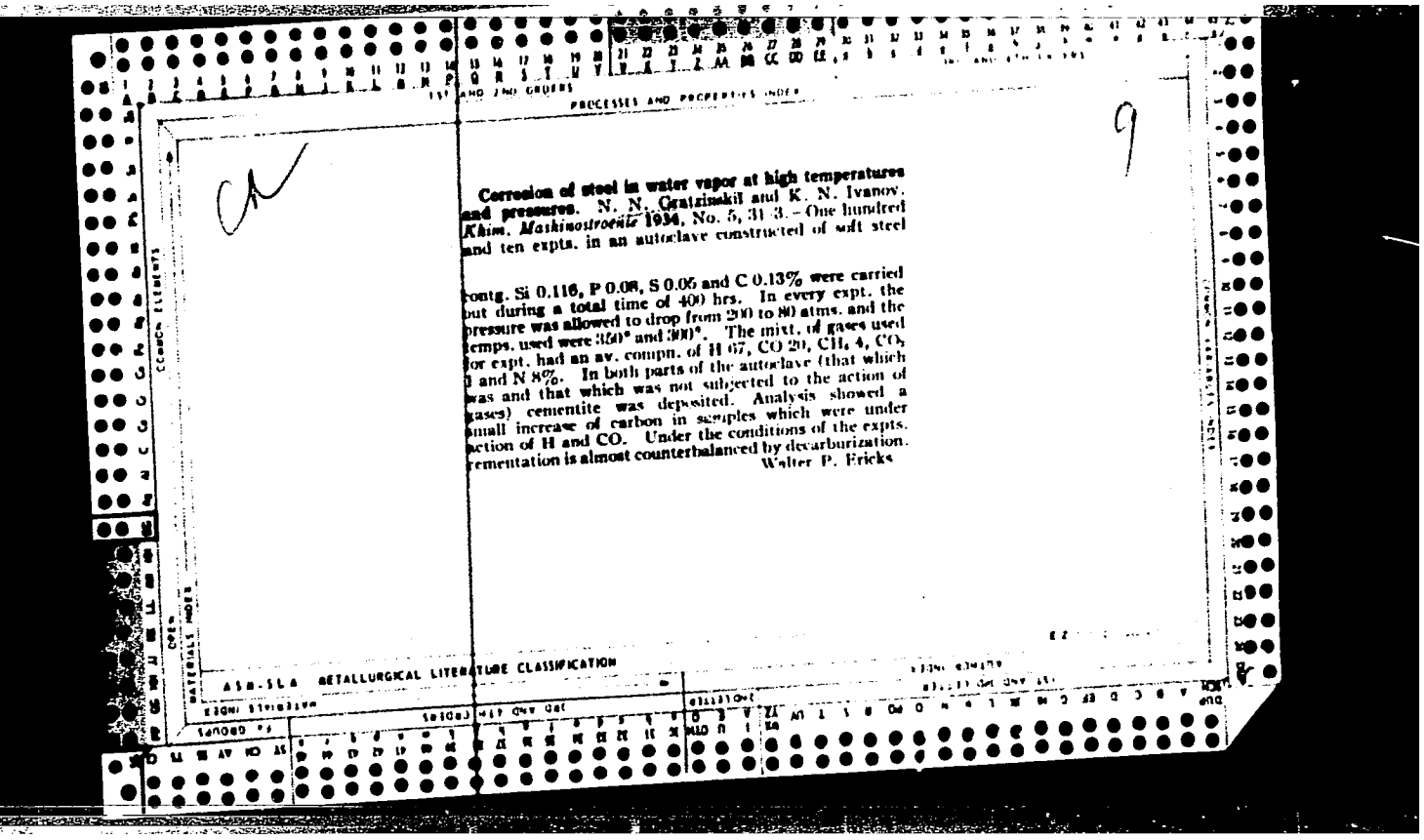
Aluminium plating of alloys in a molten $AlCl_3$–NaCl mixture. V. A. Plotnikov, N. Gratianski, and S. Dunaevskaya (Legk. Metal., 1938, 7, No. 2—3, 27—33; Chem. Zentr., 1938, ii, 1453).—Satisfactory deposits of Al plated on Cu and Fe alloys were obtained. The anode of cast Al served at the same time as a container for the bath. Optimum results were obtained with $3AlCl_3$–$SiCl_4$ at 200—250° at a cathode c.d. of 1 amp. per sq. dm. Corrosion of the Al surface by HCl must be prevented. The Al plate contains Fe 0·04, Si 0·08, and Na 0·01%. The formation of an Al-Cu alloy at the boundary surface was detected metallographically.

Cu. Abs. (e)



The oxidation of aluminum-coated copper wires. V. A. Plotnikov, N. N. [illegible] and Z. Denchenko. *Mem. Inst. Chem. All Ukrainian Acad. Sci.* 3, 111-18(1934).—An Al oxide coating up to 0.03 mm. thickness was produced by electrolytic oxidation at 120 volts and 0.02 0.04 amp./cm.^{2} at 25-30° in a 3 to 4% oxalic acid soln. Preliminary etching of the wire with alkali improved the final insulating properties.

P. H. Rathmann



PROCESSES AND PROPERTIES INDEX

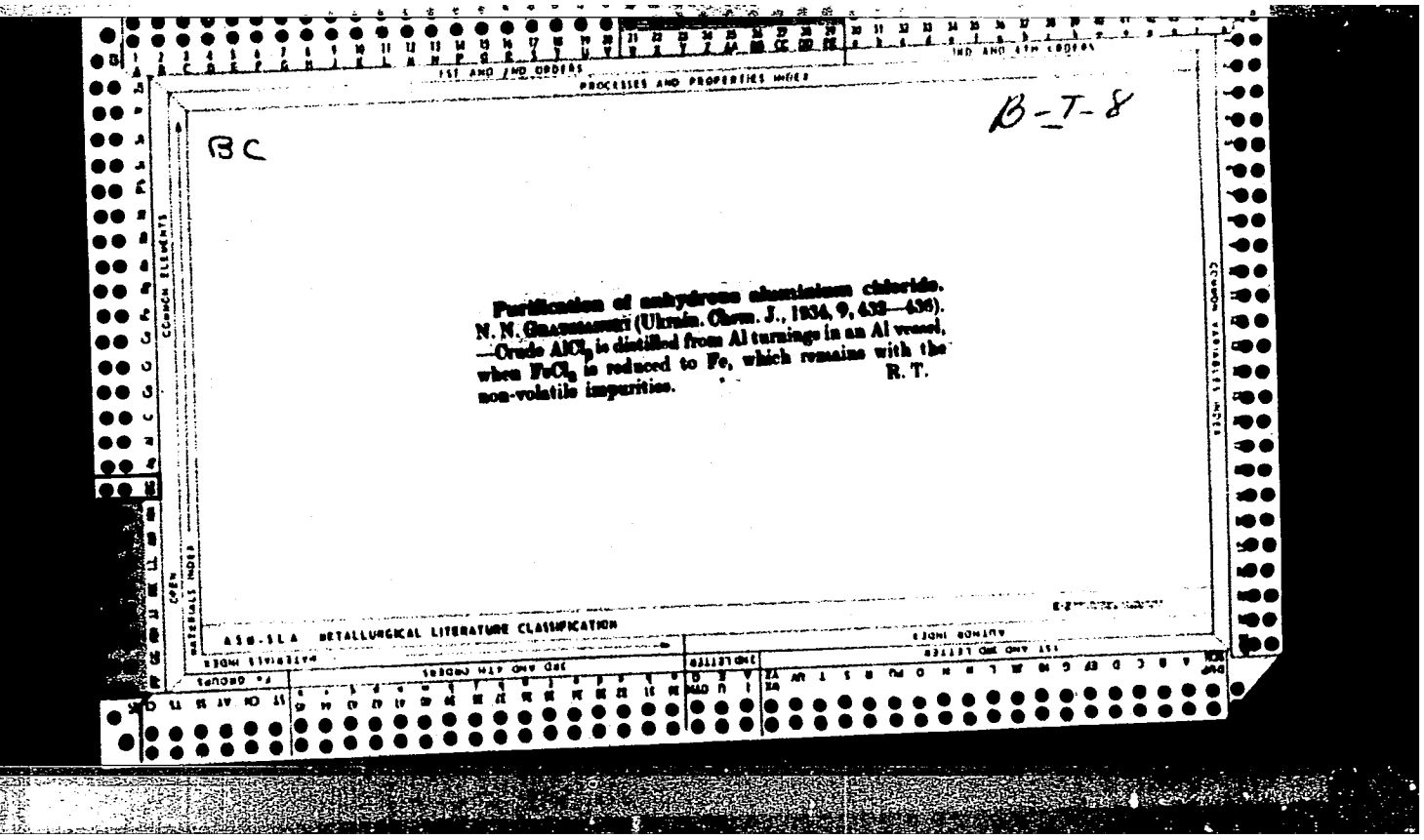
9

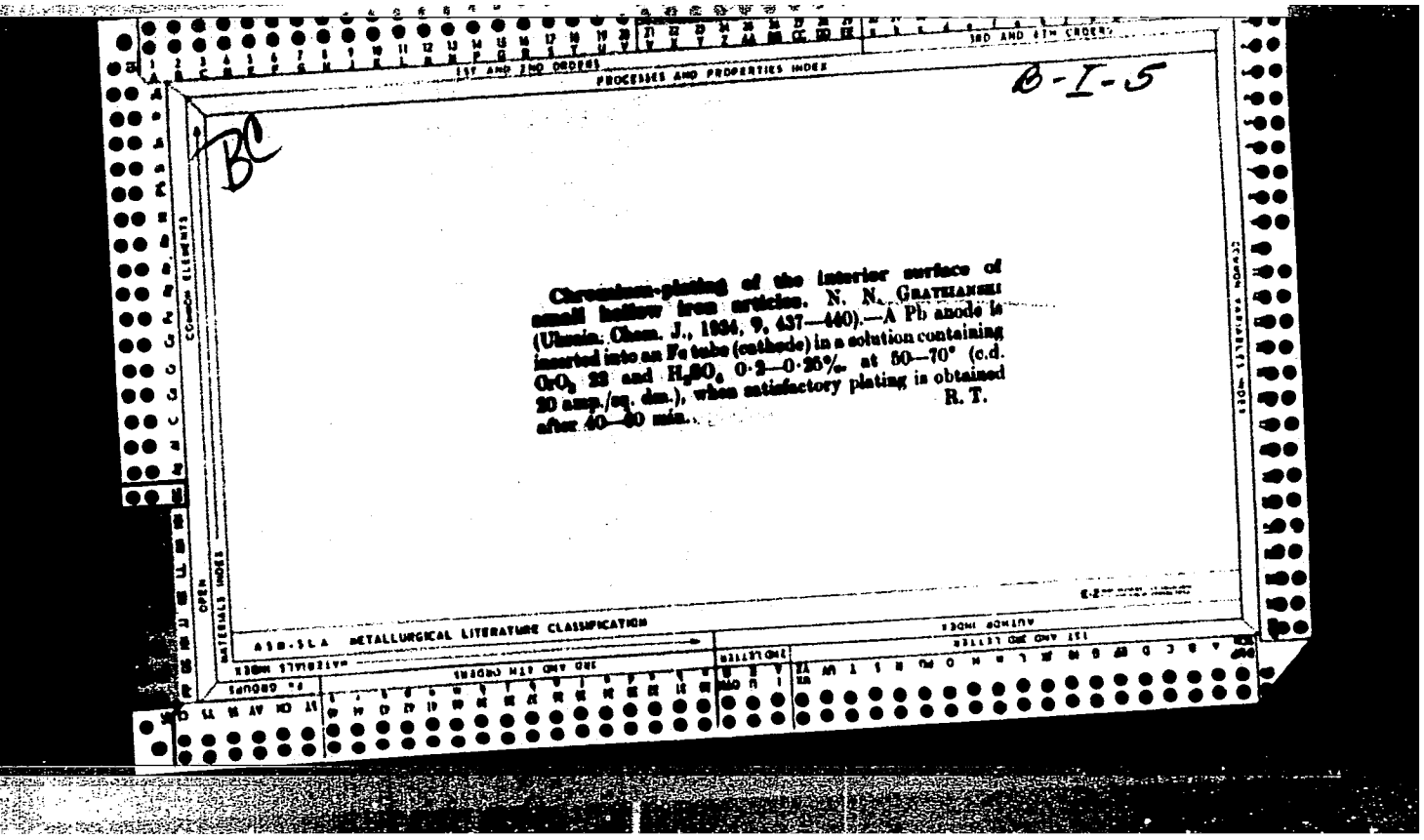
Corrosion of steel in water vapor at high temperatures and pressures. N. N. Gratzinskii and K. N. Ivanov. *Khim. Mashinostroenie* **1934**, No. 5, 31-3.—One hundred and ten expts. in an autoclave constructed of soft steel

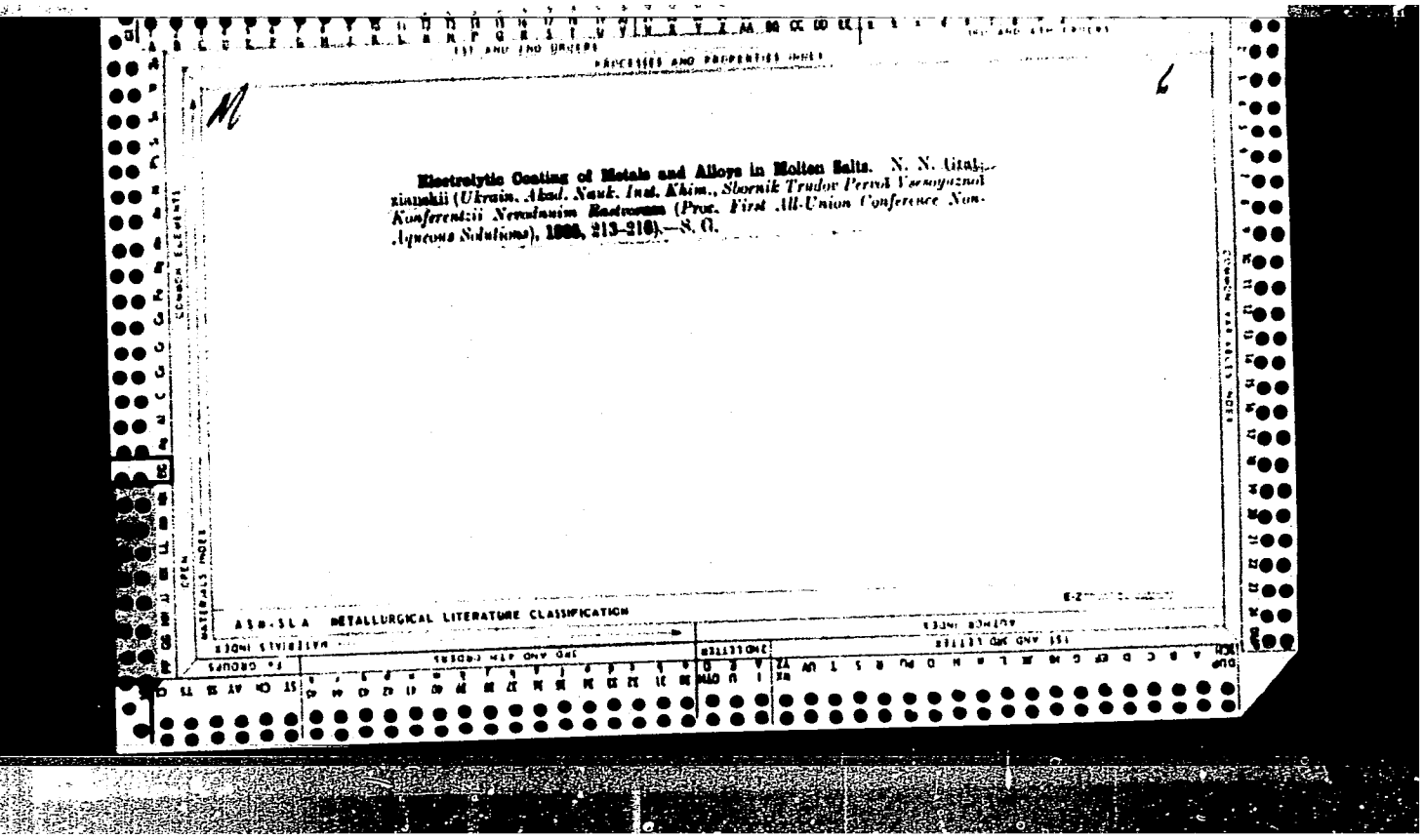
contg. Si 0.116, P 0.08, S 0.05 and C 0.13% were carried out during a total time of 400 hrs. In every expt. the pressure was allowed to drop from 200 to 80 atms. and the temps. used were 350° and 300°. The mixt. of gases used for expt. had an av. compn. of H 67, CO 20, CH_4 4, CO_2 3 and N 8%. In both parts of the autoclave (that which was and that which was not subjected to the action of gases) cementite was deposited. Analysis showed a small increase of carbon in samples which were under action of H and CO. Under the conditions of the expts. cementation is almost counterbalanced by decarburization.

Walter P. Fricks

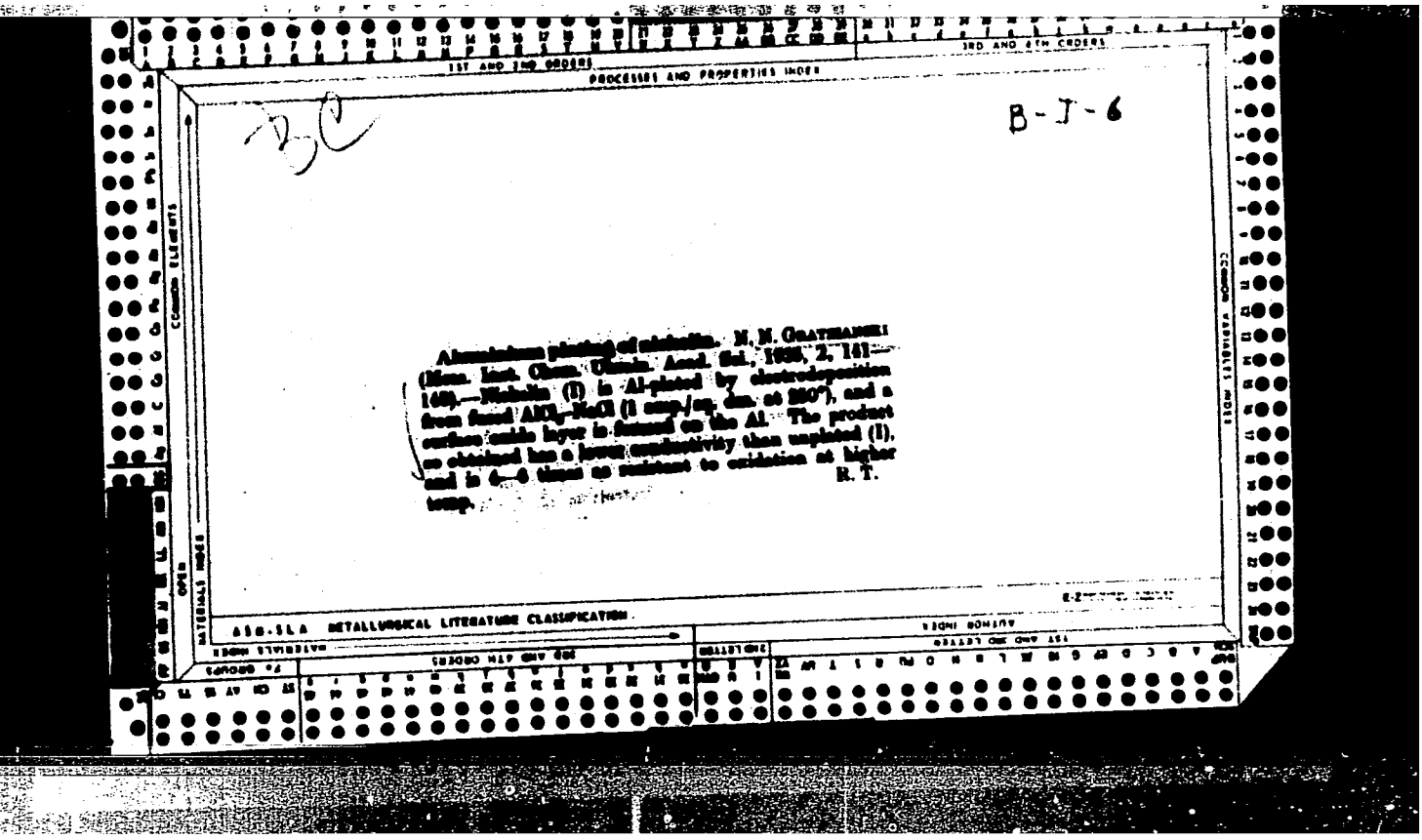
ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

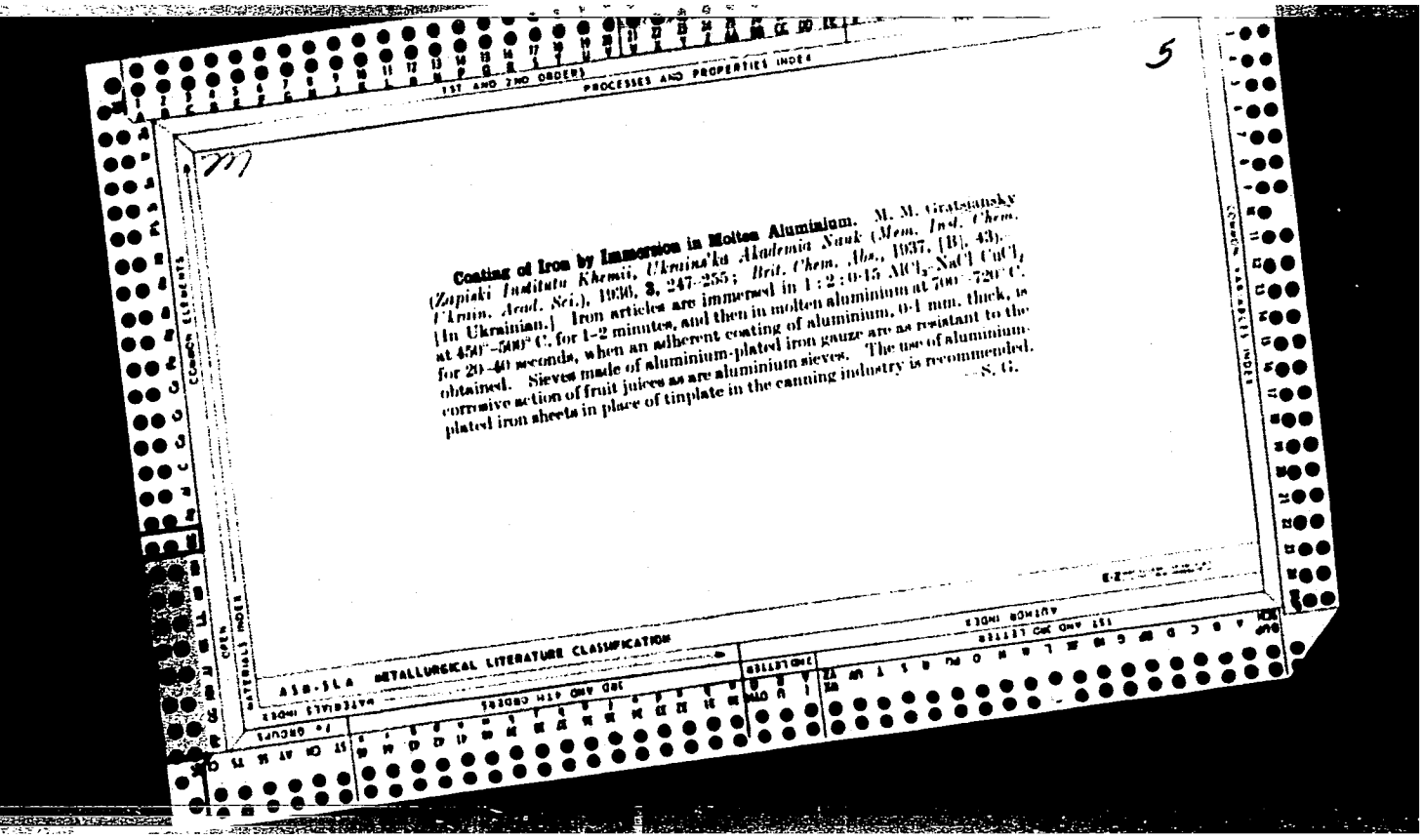






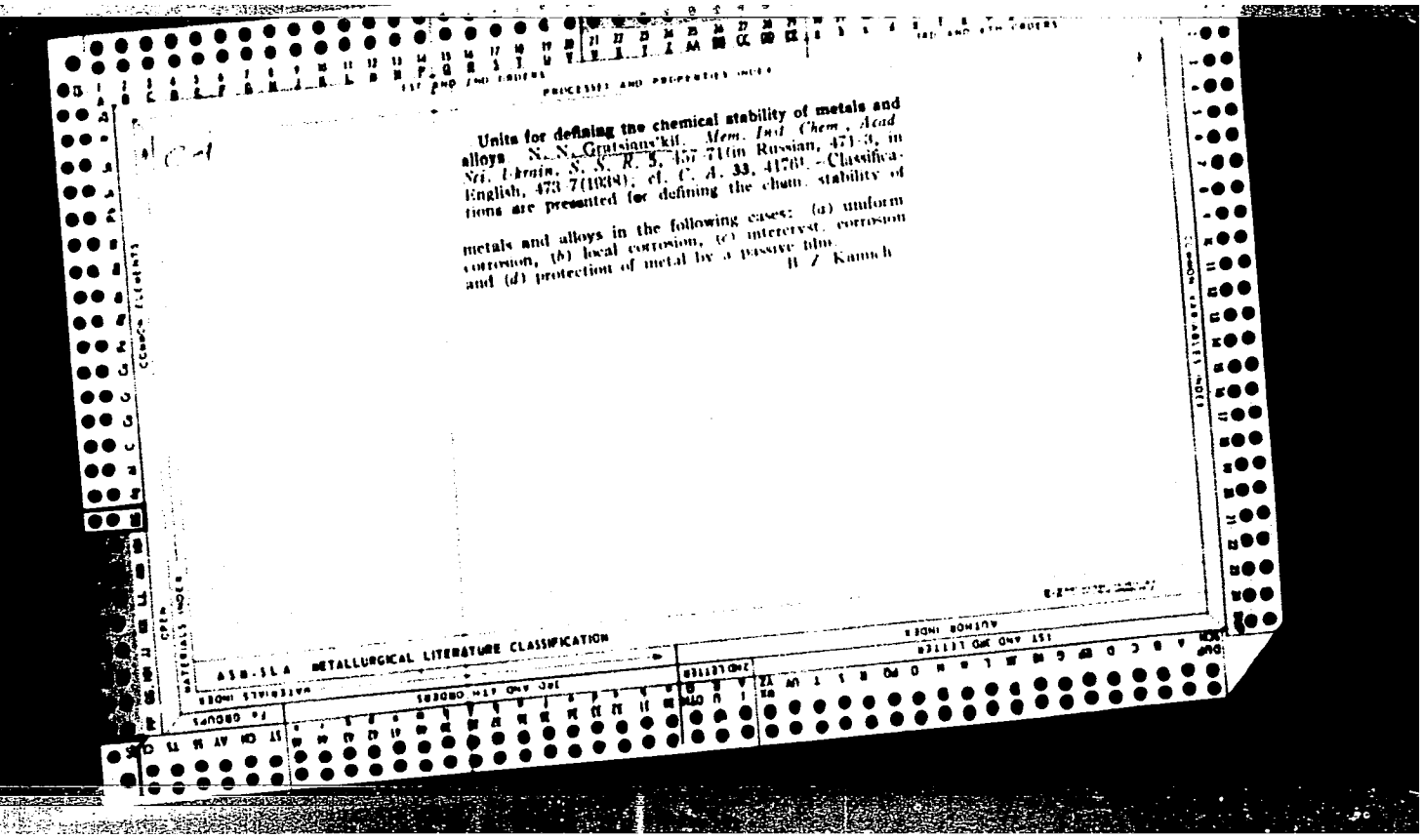
Electrolytic Coating of Metals and Alloys in Molten Salts. N. N. Grab-
xinskii (*Ukrain. Akad. Nauk. Inst. Khim., Sbornik Trudov Pervoi Vsesoyuznoi
Konferentsii Nevodnaim Rastvoram* (*Proc. First All-Union Conference Non-
Aqueous Solutions*), 1960, 213–216).—S. G.





Coating of Iron by Immersion in Molten Aluminium. M. M. Gratsianskv (*Zapiski Institutu Khemii, Ukrainska Akademia Nauk* (*Mem. Inst. Chem. Ukrain. Acad. Sci.*), 1936, **3**, 247–255; *Brit. Chem. Abs.*, 1937, [B], 43). [In Ukrainian.] Iron articles are immersed in 1 : 2 : 0·15 $AlCl_3$–$NaCl$–$CuCl_2$ at 450°–500° C. for 1–2 minutes, and then in molten aluminium at 700°–720° C. for 20–40 seconds, when an adherent coating of aluminium, 0·1 mm. thick, is obtained. Sieves made of aluminium-plated iron gauze are as resistant to the corrosive action of fruit juices as are aluminium sieves. The use of aluminium-plated iron sheets in place of tinplate in the canning industry is recommended.

—S. G.



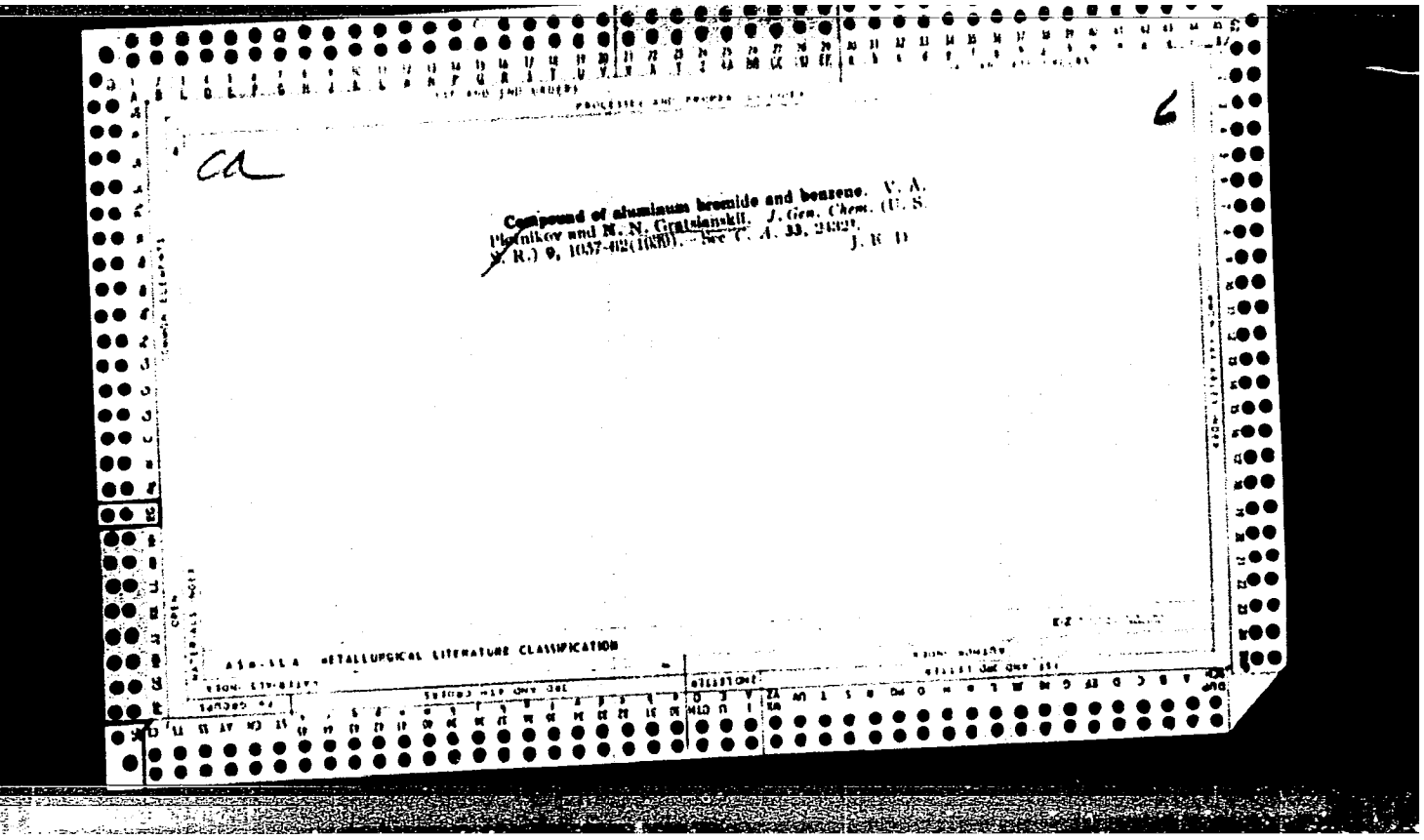
Units for defining the chemical stability of metals and alloys. N. N. Gulsianu'kil. *Mem. Inst. Chem., Acad. Sci. Ukraine, S. S. R.* 5, 457-71(in Russian, 471-3, in English, 473-7(1938); cf. *C. A.* 33, 4176⁸. Classifications are presented for defining the chem. stability of metals and alloys in the following cases: (a) uniform corrosion, (b) local corrosion, (c) intercryst. corrosion and (d) protection of metal by a passive film.

H. J. Kaunch

7

Units of chemical resistance of metals and alloys. N. N. Gratsianskii. *Khim. Mashinostroenie* 1938, No. 6, 33-5.—A discussion of various systems used in designating comparative chem. resistance of various metals and alloys. Ten references. S. L. Madorsky

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



1ST AND 2ND ORDERS | 3RD AND 4TH ORDERS

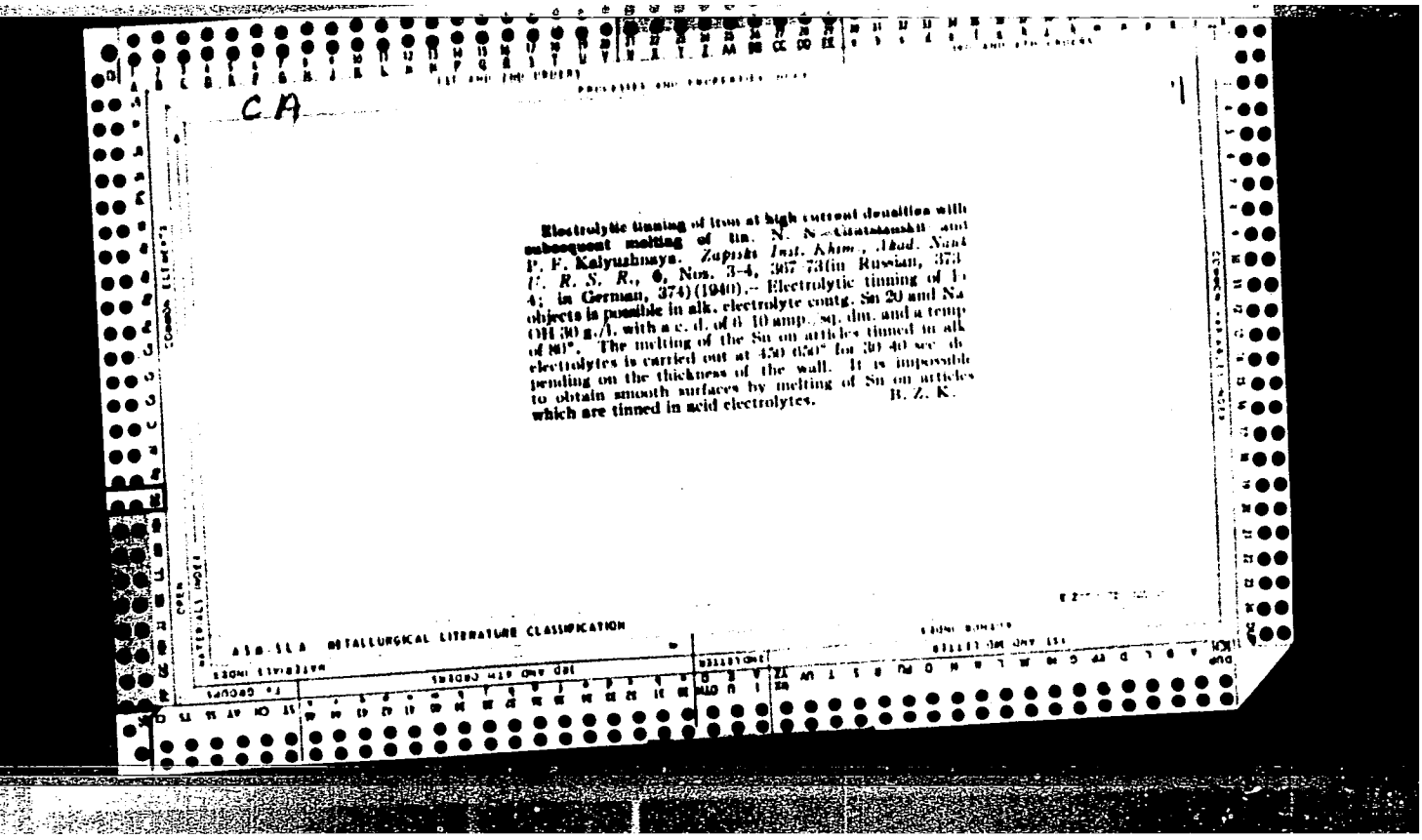
PROCESSES AND PROPERTIES INDEX

4 2

Choice and testing of materials for construction of apparatus for production of 2-furaldehyde. N. N. Gratsianskii and S. M. Fedorova. *Korroziya i [illegible]* No. 1, [illegible]-21(1940).—The following materials were [illegible]: (1) sheet copper contg. 0.05% impurities, (2) Al bronze contg. 10% Al, (3) cast iron contg. C 1.48, Cr [illegible], Si 0.96, Mn [illegible] and S 0.053%, (4) cast iron [illegible] 4.8% Al, (5) [illegible] Cu. Materials (4) and (5) catalyze the [illegible] of boiling furaldehyde, and are, therefore, unsuitable. Material resisted corrosion under all conditions of the process, except in the autoclave and the neutralizer, where it lost, resp., 1.07 and 0.61 g. per sq. m. per hr. The best material for the autoclave and the neutralizer is Al bronze (losses 0.03–0.06 g. per sq. m. per hr.). Sheet copper lost 0.9 g. In all other parts of the app. Al bronze and Cr cast iron per sq. m. per hr. underwent practically no loss. C. S. Shapiro

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

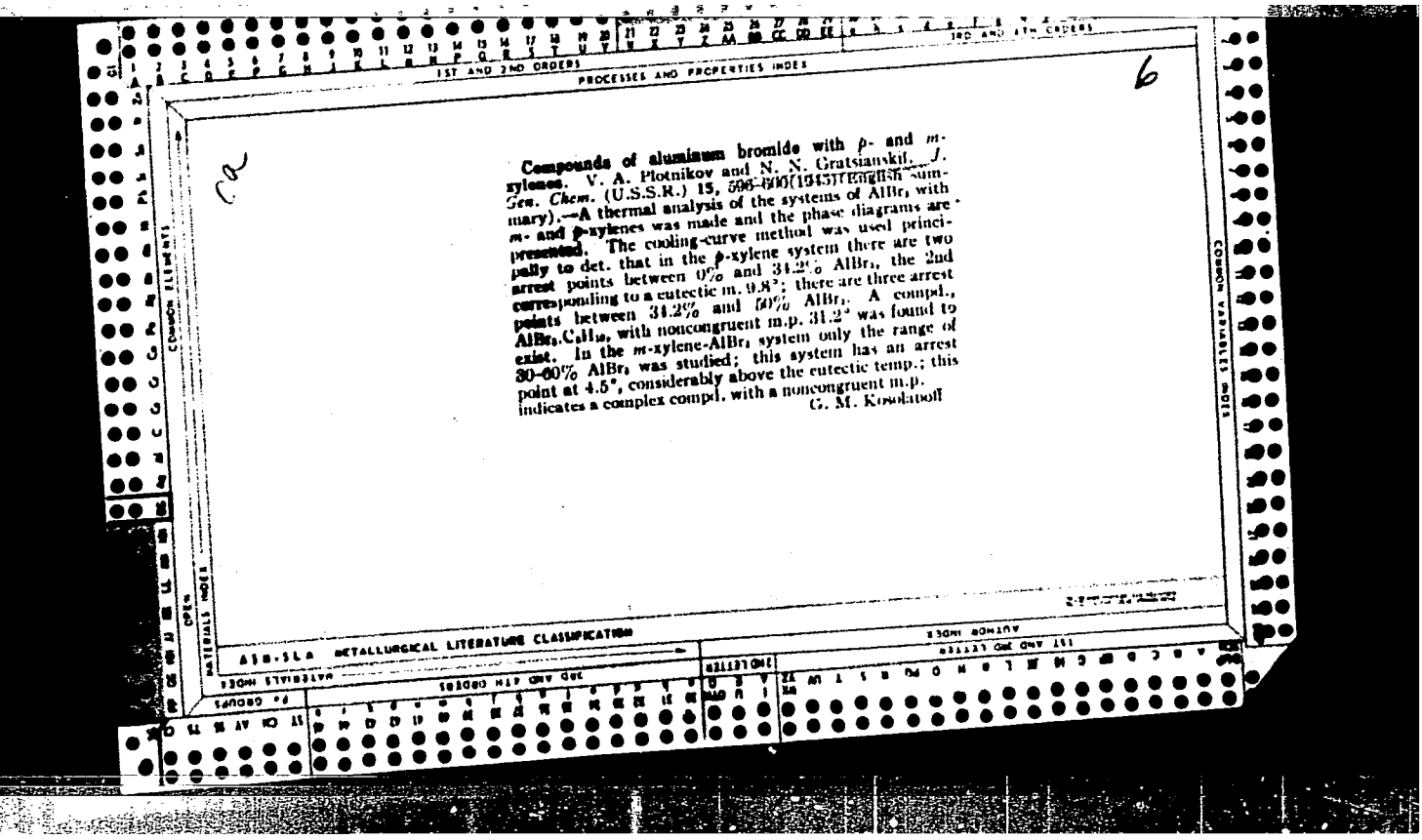
MATERIALS INDEX | AUTHOR INDEX



CA

Electrolytic tinning of iron at high current densities with subsequent melting of tin. N. S. Chistosserdov and P. F. Kalyuzhnaya. *Zapiski Inst. Khim., Akad. Nauk U. R. S. R.*, **6**, Nos. 3-4, 367-73(in Russian, 373-4; in German, 374)(1940).— Electrolytic tinning of Fe objects is possible in alk. electrolyte contg. Sn^{2+} and Na_2 OH 30 g./l. with a c. d. of 6-10 amp./sq. dm. and a temp of 80°. The melting of the Sn on articles tinned in alk electrolytes is carried out at 450-650° for 30-40 sec. de pending on the thickness of the wall. It is impossible to obtain smooth surfaces by melting of Sn on articles which are tinned in acid electrolytes. B. Z. K.

A10-S1A METALLURGICAL LITERATURE CLASSIFICATION



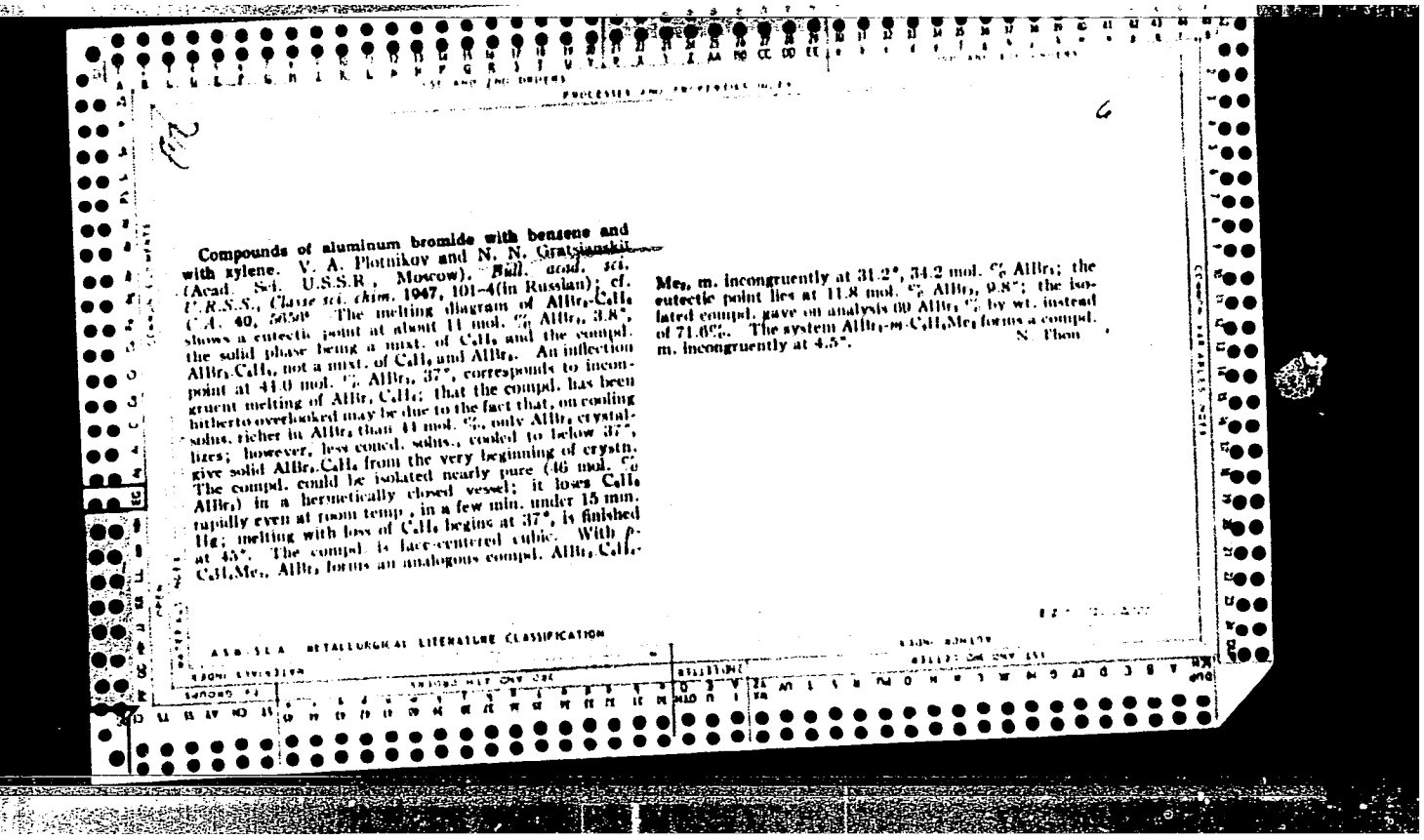
PROCESSES AND PROPERTIES INDEX

6

Compounds of aluminum bromide with *p*- **and** *m*-**xylenes.** V. A. Plotnikov and N. N. Gratsianskii. *J. Gen. Chem.* (U.S.S.R.) 15, 596-600 (1945) (English summary).—A thermal analysis of the systems of $AlBr_3$ with *m*- and *p*-xylenes was made and the phase diagrams are presented. The cooling-curve method was used principally to det. that in the *p*-xylene system there are two arrest points between 0% and 34.2% $AlBr_3$, the 2nd corresponding to a eutectic m. 9.8°; there are three arrest points between 34.2% and 50% $AlBr_3$. A compd., $AlBr_3.C_8H_{10}$, with noncongruent m.p. 31.2° was found to exist. In the *m*-xylene-$AlBr_3$ system only the range of 30-60% $AlBr_3$ was studied; this system has an arrest point at 4.5°, considerably above the eutectic temp.; this indicates a complex compd. with a noncongruent m.p.

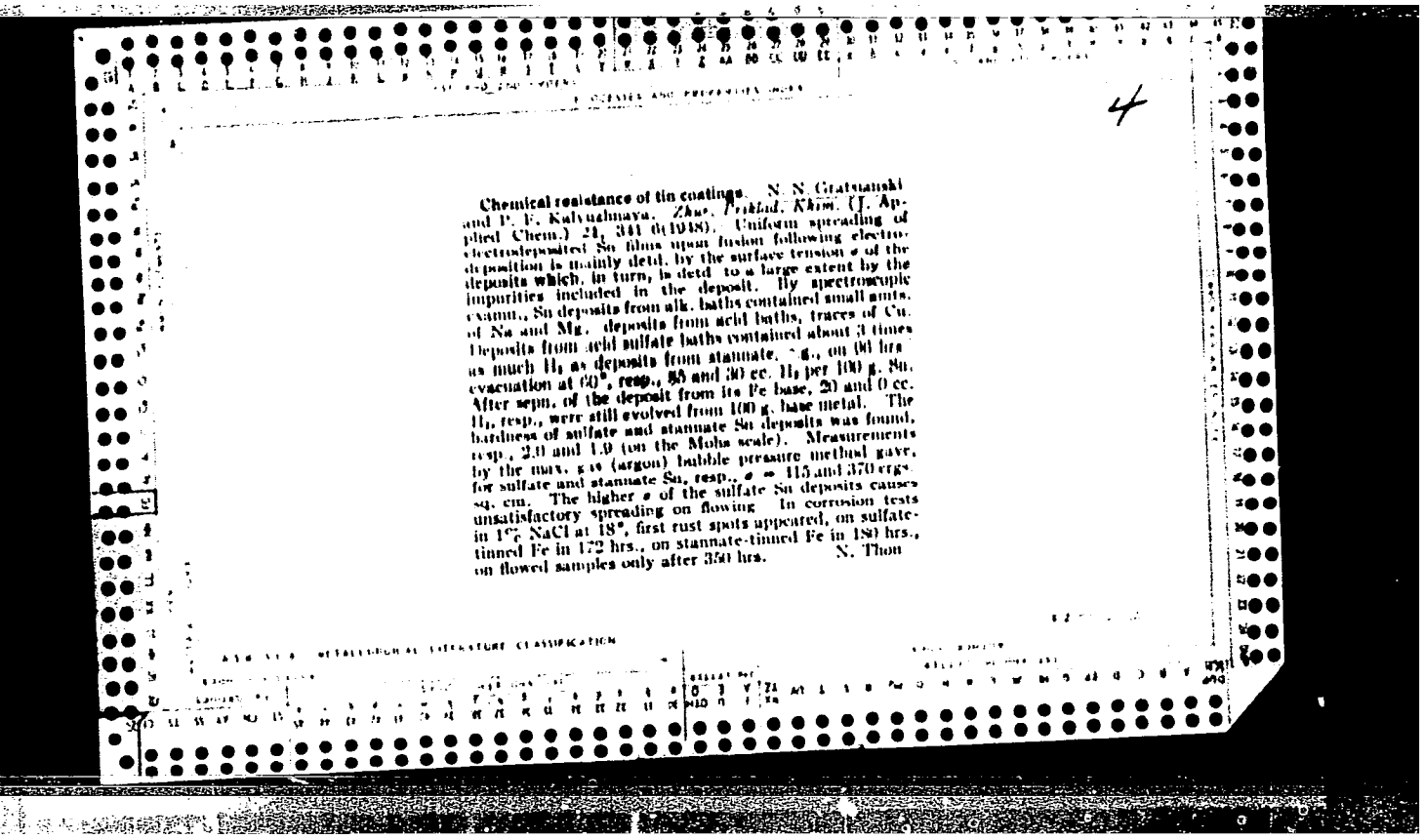
G. M. Kosolapoff

METALLURGICAL LITERATURE CLASSIFICATION



Compounds of aluminum bromide with benzene and with xylene. V. A. Plotnikov and N. N. Gratsianskii. (Acad. Sci. U.S.S.R., Moscow). *Bull. acad. sci. U.R.S.S., Classe sci. chim.* 1947, 101–4(in Russian); cf. *C.A.* 40, 5650⁹. The melting diagram of $AlBr_3$-CaH_6 shows a eutectic point at about 11 mol. % $AlBr_3$, 3.8°, the solid phase being a mixt. of CaH_6 and the compd. $AlBr_3.CaH_6$, not a mixt. of CaH_6 and $AlBr_3$. An inflection point at 44.0 mol. % $AlBr_3$, 37°, corresponds to incongruent melting of $AlBr_3.CaH_6$; that the compd. has been hitherto overlooked may be due to the fact that, on cooling solns. richer in $AlBr_3$ than 44 mol. %, only $AlBr_3$ crystallizes; however, less concd. solns., cooled to below 37°, give solid $AlBr_3.CaH_6$ from the very beginning of crystn. The compd. could be isolated nearly pure (46 mol. % $AlBr_3$) in a hermetically closed vessel; it loses CaH_6 rapidly even at room temp., in a few min. under 15 mm.; melting with loss of CaH_6 begins at 37°, is finished at 45°. The compd. is face-centered cubic. With *p*-$C_6H_4Me_2$, $AlBr_3$ forms an analogous compd. $AlBr_3.C_6H_4Me_2$, m. incongruently at 31.2°, 34.2 mol. % $AlBr_3$; the eutectic point lies at 11.8 mol. % $AlBr_3$, 9.8°; the isolated compd. gave on analysis 69 $AlBr_3$ % by wt. instead of 71.6%. The system $AlBr_3$-*m*-$C_6H_4Me_2$ forms a compd. m. incongruently at 4.5°.

N. Thon



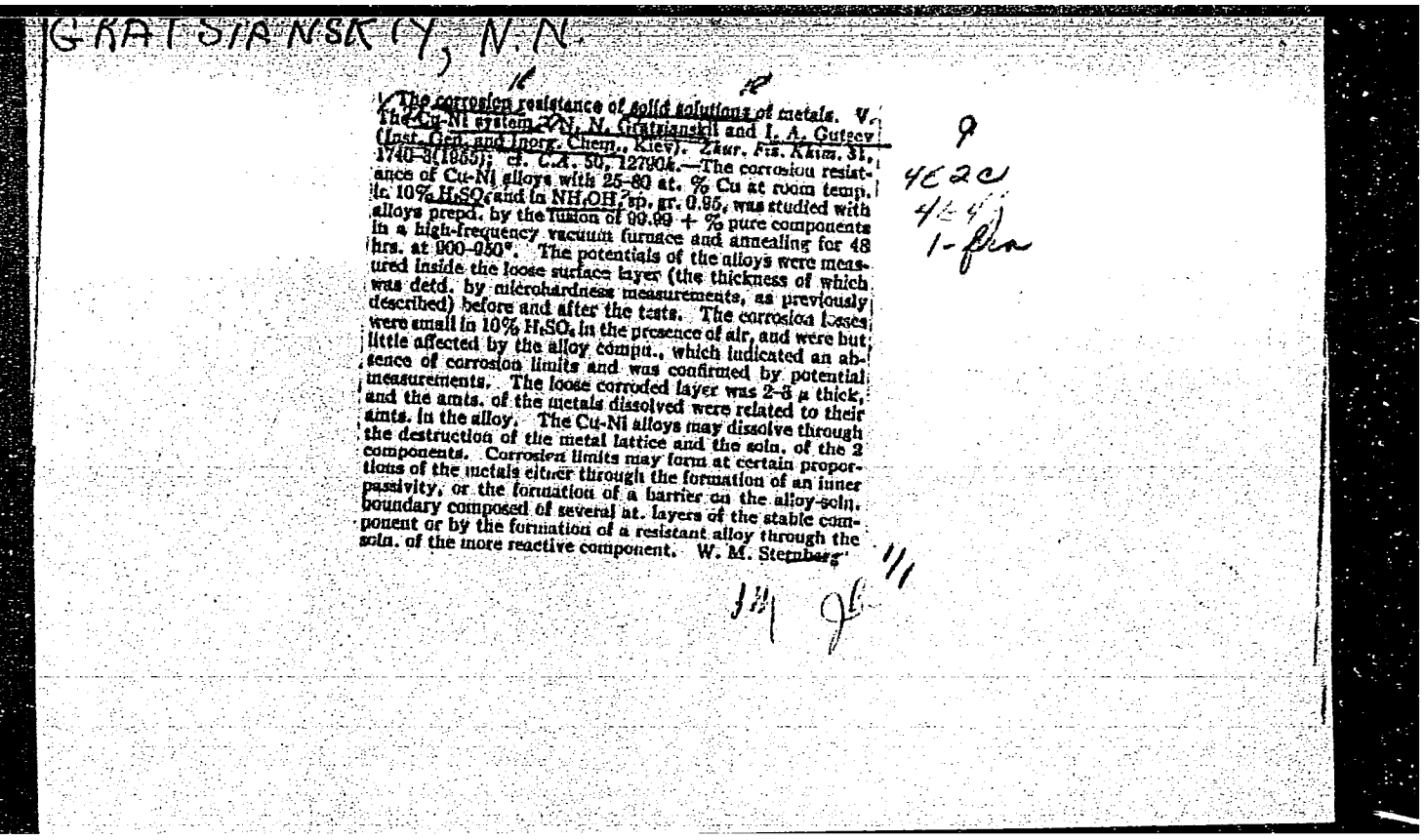
4

Chemical resistance of tin coatings. N. N. Gratsianski and P. F. Kalyuzhnaya. *Zhur. Prikład. Khim.* (J. Applied Chem.) 21, 341-6(1948). Uniform spreading of electrodeposited Sn films upon fusion following electrodeposition is mainly detd. by the surface tension σ of the deposits which, in turn, is detd. to a large extent by the impurities included in the deposit. By spectroscopic examn., Sn deposits from alk. baths contained small amts. of Na and Mg, deposits from acid baths, traces of Cu. Deposits from acid sulfate baths contained about 3 times as much H_2 as deposits from stannate, e.g., on 90 hrs. evacuation at 60°, resp., 85 and 30 cc. H_2 per 100 g. Sn. After sepn. of the deposit from its Fe base, 20 and 0 cc. H_2, resp., were still evolved from 100 g. base metal. The hardness of sulfate and stannate Sn deposits was found, resp., 2.0 and 1.9 (on the Mohs scale). Measurements by the max. gas (argon) bubble pressure method gave, for sulfate and stannate Sn, resp., σ = 115 and 370 ergs/sq. cm. The higher σ of the sulfate Sn deposits causes unsatisfactory spreading on flowing. In corrosion tests in 1% NaCl at 18°, first rust spots appeared, on sulfate-tinned Fe in 172 hrs., on stannate-tinned Fe in 180 hrs., on flowed samples only after 350 hrs. N. Thon

GRATSIANSKIY, N.N.; KALYUZHNAYA, P.F.

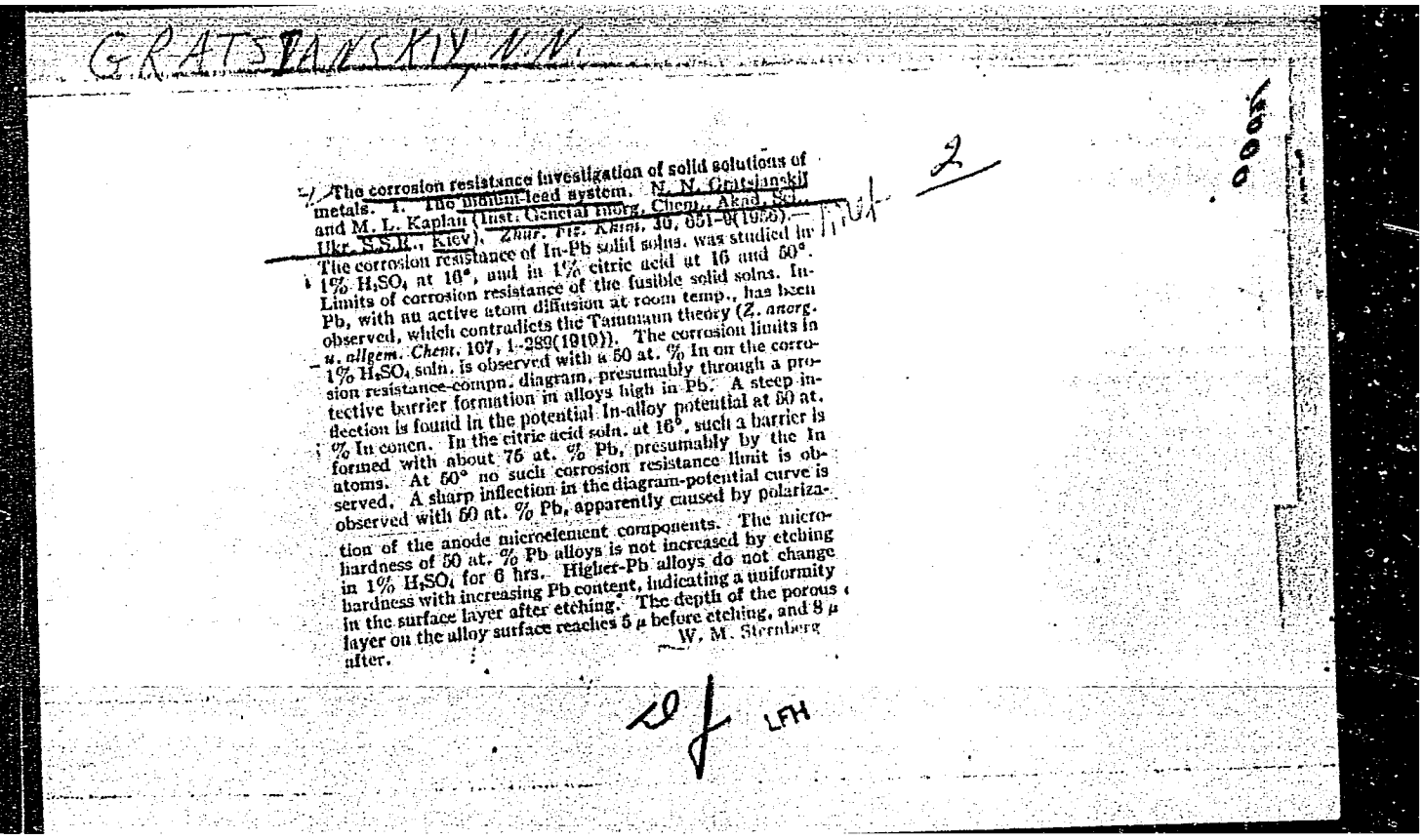
Electrodeposition of copper, tin, and lead solutions of complex compounds. Ukr.khim.zhur.19 no.4:377-385 '53. (MLRA 8:2)

1. Institut obshchey i neorganicheskoy khimii Akademii nauk USSR.
(Electroplating) (Compounds, Complex)



GRATSIANSKII, N. N.

The corrosion resistance of solid solutions of metals. V. The Cu-Ni system. N. N. Gratsianskii and I. A. Gutsev (Inst. Gen. and Inorg. Chem., Kiev). Zhur. Fiz. Khim. 31, 1740–3(1965); cf. C.A. 50, 12790k.—The corrosion resistances of Cu-Ni alloys with 25–80 at. % Cu at room temp. in 10% H_2SO_4 and in NH_4OH, sp. gr. 0.95, was studied with alloys prepd. by the fusion of 99.99 + % pure components in a high-frequency vacuum furnace and annealing for 48 hrs. at 900–950°. The potentials of the alloys were measured inside the loose surface layer (the thickness of which was detd. by microhardness measurements, as previously described) before and after the tests. The corrosion losses were small in 10% H_2SO_4 in the presence of air, and were but little affected by the alloy compn., which indicated an absence of corrosion limits and was confirmed by potential measurements. The loose corroded layer was 2–8 μ thick, and the amts. of the metals dissolved were related to their amts. in the alloy. The Cu-Ni alloys may dissolve through the destruction of the metal lattice and the soln. of the 2 components. Corrosion limits may form at certain proportions of the metals either through the formation of an inner passivity, or the formation of a barrier on the alloy-soln. boundary composed of several at. layers of the stable component or by the formation of a resistant alloy through the soln. of the more reactive component. W. M. Sternberg



GRATSIANSKIY N.N.

The corrosion resistance investigation of solid solutions of metals. I. The bismuth-lead system. N. N. Gratsianskii and M. L. Kaplan (Inst. General Inorg. Chem., Akad. Sci. Ukr. S.S.R., Kiev). *Zhur. Fiz. Khim.* 10, 651-9(1938).—The corrosion resistance of In-Pb solid solns. was studied in 1% H_2SO_4 at 16°, and in 1% citric acid at 16 and 50°. Limits of corrosion resistance of the fusible solid solns. In-Pb, with an active atom diffusion at room temp., has been observed, which contradicts the Tammann theory (*Z. anorg. u. allgem. Chem.* 107, 1-289(1919)). The corrosion limits in 1% H_2SO_4 soln. is observed with a 50 at. % In on the corrosion resistance-compn. diagram, presumably through a protective barrier formation in alloys high in Pb. A steep inflection is found in the potential In-alloy potential at 50 at. % In concn. In the citric acid soln. at 16°, such a barrier is formed with about 75 at. % Pb, presumably by the In atoms. At 50° no such corrosion resistance limit is observed. A sharp inflection in the diagram-potential curve is observed with 50 at. % Pb, apparently caused by polarization of the anode microelement components. The microhardness of 50 at. % Pb alloys is not increased by etching in 1% H_2SO_4 for 6 hrs. Higher-Pb alloys do not change hardness with increasing Pb content, indicating a uniformity in the surface layer after etching. The depth of the porous layer on the alloy surface reaches 5 μ before etching, and 8 μ after.

W. M. Sternberg

GRATSIANSKIY, N. N.

18 18 8

Corrosion resistance of metallic solid solutions. II. The magnesium-cadmium system. N. N. Gratsianskii and P. F. Kalyuzhnaya (Inst. Gen. and Inorg. Chem., Acad. Sci. Ukr. S.S.R., Kiev). *Zhur. Fiz. Khim.* 30, 1267–77 (1956); cf. *C.A.* 50, 12790h.—Pure Cd (contg. spectrographic traces of Cu and Pb) and Mg (with traces of Cu and Ca) were alloyed to form solid solns. with 20–80% Cd. The corrosion resistance of the pure metals and of the alloys in 0.1*N* H_2SO_4 and in 5% NH_4Cl was studied with alloys *a*, annealed at the conversion temp. of solid solns. to compds., and *b* annealed under conditions preventing the compd. formation. Corrosion limits were observed in *a* at Mg concn. below 75%, probably caused by a protective barrier of Mg_2Cd. The compn.-potential curve in the solns. tested showed that the potential of the corroding alloys varied smoothly with the compn. with no sudden changes. Analogous results were obtained in the *b* group, but the time required to get const. potentials and corrosion stability is much longer, presumably due to the time needed to complete the transformations in solid solns. The microhardness detns. of surface layers of the solid Mg-Cd solns. showed that a max. exists between 45 and 55 at.% Mg, corresponding to the MgCd compn. formation. Corrosion reduces the surface hardness, and becomes the same with all alloy compns., showing the formation of identical alloy compn. A porous layer was found to exist on the surface before the corrosion tests was 1–2 μ thick, and increases to 3–4 μ after the tests. The uniform layer thickness after corrosion is <1 μ. A uniformity of deeper surface layers (2–3μ) was observed in alloys contg. over 30 at.% Mg. W. M. Sternberg

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GRATSIANSKIY, N. N.

Corrosion resistance of metallic solid solutions. III. The cadmium-mercury system. N. N. Gratsianskii and M. L. Kaplan (Inst. Gen. and Inorg. Chem., Acad. Sci. Ukr. S.S.R., Kiev). *Zhur. Fiz. Khim.* 31, 418–23 (1957); cf. *C.A.* 51, 8631*f*.—Hg-Cd solid solns. were prepd. with 70, 60, 50, 35.9, 25.5, and 15 at. % Hg, balance Cd, and their corrosion-resistance detd. in 1*N* HCl and 3% NaCl. A corrosion resistance limit in HCl was found with 40 at. % Hg, which contradicts Tammann's theory (T. and Marais, *C.A.* 19, 922). A protective barrier is assumed to form in alloys with considerable at. diffusion under conditions when the soln. rate exceeds the diffusion rate of the atoms, and the gravimetric corrosion values have become const. The corrosion resistance limit depended on the formation rate of the protective layer on the alloy-soln. boundary. No corrosion resistance boundary was observed in 3% NaCl, and the potentials of alloys on the compn.-potentials curve had no sharp inflections. W. M. Sternberg

GRATSIANSKIY, N.N.; KALYUZHNAYA, P.F.

Studies on the corrosion resistance of metal solid solutions.
Part 4: The system Bi-Sb. Zhur.fiz.khim. 31 no.4:887-892 Ap '57.
(MIRA 10:7)

1. Akademiya nauk USSR, Institut obshchey i neorganicheskoy khimii.
(Solutions, Solid) (Bismuth-antimony alloys)

Gratsianskiy, N.N.

AUTHOR: Gratsianskiy, N.N., Kalyuzhnaya, P.F. 76-11-12/35

TITLE: The Investigation of the Corrosion Resistance of Solid Solutions of Metals (Issledovaniye korrozionnoy stoykosti tverdykh rastvorov metallov) VI. The Ag-Cd System (VI. Sistema Ag-Cd)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1957, Vol. 31, Nr 11, pp. 2458-2463 (USSR)

ABSTRACT: This is a continuation of previous works by the same author [Ref.1]. Here the corrosion resistance of Ag-Cd-alloys was investigated by the method of determining losses of weight in a 5% HCl solution and in a 3% NaCl solution at room temperature. The potentials of corroding alloys were measured. By the method of measuring the microstrength the thickness of the loosened alloy surface layer before and after corrosion was determined. In the 5% HCl solution and in the 3% NaCl solution a considerable decrease of weight losses was found within the domain of 40 At.% silver in Ag-Cd alloys. This indicates the formation of corrosion-resistance limit, probably at the cost of the forming of an anti-corrosion surface layer of particles of the constant Ag_2Cd_3-compound. The potential amounts of the corroding alloys, which were measured during corrosion investigations

Card 1/2

AUTHORS: Gratsianskiy, N. N., Bogacheva, N. A. 76-32-4-24/43

TITLE: Investigation of the Resistance to Corrosion of Solid Metallic Solutions (Issledovaniye korrozionnoy stoykosti tverdykh rastvorov metallov)The In- Pb System (Sistema In - Pb)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1958, Vol. 32, Nr 4, pp. 875 - 881 (USSR)

ABSTRACT: Determinations of the resistance to corrosion in solutions of 3% NaCl, 5% HCl and 1% H_2SO_4 were carried out at 20°C, as well as in 1% citric acid solutions at 16, 20, 30 and 50°C, the composition of the surface layer having been investigated. The experimental results in 1% H_2SO_4 correspond to those of a previous work, while in 1% citric acid the displacement of the limit of the resistance to corrosion takes a regular course with the increase of the content of the more resistant component indium; this is explained by the formation of an anticorrosive surface layer. The examination in 3% NaCl and 5% HCl solutions showed that the velocity of dissolution in the latter is essentially greater, and that a limit of the resistance to

Card 1/3

Investigation of the Resistance to Corrosion of Solid Metallic Solutions. The In - Pb System

corrosion is present at 60 atom% Pb, while in the case of the first mentioned a slight loss of weight was observed. The potential measurements showed that after some time a constant value is achieved with the alloys rich in lead having values similar to those of lead and those with indium being similar to those of the indium potential. In 5% HCl at a content of about 50 atom% Pb a jump of the curve composition vs. potential was observed just as well as in 1% citric acid at a content of from 50 - 70 atom% Pb. According to a method elaborated by M. B. Neyman and A. Ya. Shinyayev (Reference 2) determinations of the surface layers were carried out and it was observed that their composition prior to corrosion corresponds to that of the alloy which consist of lead atoms from the corrosively less resistant to the limit of corrosion resistance; in alloys of less than 75 atom% lead the formation of the limit of corrosion resistance is explained by the formation of a surface layer of a solid solution of In-Pb at 2:3. During corrosion indium enters solution in spite of the low resistance of lead. The resistant

Investigation of the Resistance to Corrosion of Solid Metallic Solutions. The In - Pb System

surface layers showed the same composition to a depth of 3μ, the non resistant to a depth of 5μ, the latter having been considerably loosened to a depth of 6μ on the action of 5% HCl - the first mentioned were not. There are 7 figures, 2 tables and 2 references, 2 of which are Soviet.

ASSOCIATION: Akademiya nauk UkrSSR, Institut obshchey i neorganicheskoy khimii, Kiyev (Kiyev, Institute for General and Inorganic Chemistry, AS Ukrainian SSR)

SUBMITTED: November 12, 1956

AVAILABLE: Library of Congress

1. Indium-lead systems--Corrosion

AUTHORS: Gratsianskiy, N. M., Kalyuzhnaya, P. F. 76-32-5-12/47

TITLE: Investigation of Corrosion Resistance of Solid Metallic Solutions (Issledovaniye korrozionnoy stoykosti tverdykh rastvorov metallov) The System Mg - Cd (Sistema Mg - Cd)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol. 32, Nr 5, pp. 1038 - 1042 (USSR)

ABSTRACT: In continuation of already carried out experiments two types of structures are investigated in this paper; after annealing at conversion temperatures of solid solutions into chemical compounds (I), after annealing on conditions excluding the formation of chemical compounds (II), with the function of the corrosion resistance limit of the Mg - Cd system on the aggressive medium, as well as the composition and thickness of the surface layer at the boundary alloy-corrosive medium of the parts prior to and after the occurrence of the corrosion resistance boundary being investigated in the present case. Alloys of different cadmium content, as well as pure metals were investigated, with a 0,1 n sulfuric acid solution and a 5% sodium sulfate solution being used. It was observed that alloys richer in magnesium dissolve more quickly in both solutions,

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with a covering layer of corrosion products difficult to solve being formed in the sodium sulfate solution, which fact makes difficult a judgement on the limit of corrosion resistance. The potential measurements of the corroding alloys showed an equal change with the composition, with the potential stabilizing more quickly in the alloys (I) in both solutions, which is explained by a regrouping of the atoms in the alloys (II). The polarographic analyses of the solutions prior to and after corrosion, after the dissolution of the thin surface layer of the alloys showed that prior to the corrosion the composition of the surface layer corresponds to that of the alloy, while after the corrosion the limit of the corrosion resistance is formed by the formation of a layer of cadmium atoms on the surface in 0,1 n sulfuric acids, and in 5% sodium sulfate solutions corrosion products form which are difficult to solve. The investigations of the loosening and thickness of the surface layer showed that after the corrosion the loosening in alloys rich in cadmium amounts to 1,5μ while this value is twice as great in alloys rich in magnesium. There are 3

Investigation of Corrosion Resistance of Solid Metallic Solutions. The System Mg - CD 76-32-5-12/47

figures, 2 tables and 2 references, 2 of which are Soviet.

ASSOCIATION: Akademiya nauk USSR Institut obshchey i neorganicheskoy khimii, Kiyev (Kiyev Institute for General and Inorganic Chemistry, AS Ukrainian SSR)

SUBMITTED: November 30, 1956

1. Corrosion resistant alloys--Analysis 2. Cadmium-magnesium systems--Corrosion 3. Cadmium-magnesium systems--Surface properties 4. Polarographic analysis--Applications

Card 3/3

5(4),18(7)

AUTHORS: Gratsianskiy, N. N., Ryabov, A. K. SOV/76-33-2-39/45

TITLE: Surface Phenomena in the Corrosion of Solid Solutions of Metals (Poverkhnostnyye yavleniya pri korrozii tverdykh rastvorov metallov). System Cd - Hg (Sistema Cd - Hg)

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 2, pp 487-491 (USSR)

ABSTRACT: Diffusion processes which take place on the surface layers at the boundary between solid metal solutions and the corrosion medium can lead to the formation of a corrosion-resistant layer as well as an intensification of the destruction by corrosion of the alloy (Ref 1). In the case that the surface-active component is a corrosion-resistant element a passivation of the surface and a partial inhibition of the dissolution process take place. In order to take into consideration the effect of the surface-active component the surface tension σ must be determined in its dependence upon the composition. The value for σ is best determined at the boundary between the melted metal and its metal vapor. In the work reported here the determinations were carried out on the system Cd-Hg at a

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temperature 30° above the melting points of the metals and above the flow temperature of the alloy and at the phase boundary (with metal vapor). The following compositions were investigated (given in weight %): pure Hg, Cd - 1.0%, Cd - 5.0%, Cd - 25.0%, Cd - 40.0%, Cd - 49.5%, Cd - 60.0%, Cd - 75.0%, and pure Cd. The vacuum apparatus (Fig 1) with which the σ-measurement was carried out is similar to the gravitation apparatus according to P. P. Pugachevich (Ref 2). The value obtained for σ was calculated using the equation of Kontor, which was completed by B. I. Bering and N. L. Pokrovskiy (Ref 3), and a value of 487 erg/cm^2 was found for Hg at -10°C and 586 erg/cm^2 for Cd at 350°C. While in alloys rich in cadmium an increase in the mercury content from 0 to 30 atom% changes only inconsiderably the value for σ (of 586-587 erg/cm^2), the alloys rich in mercury showed an increase of the σ value from 487 to 558 erg/cm^2 with an increase in the cadmium content from 0 to 55 atom%. The point of transition from the α to the β phase, which occurs with a mercury content of 35 atom%, was at

Surface Phenomena in the Corrosion of Solid Solutions of Metals. System Cd - Hg

SOV/76-33-2-39/45

σ = 618 erg/cm^2. Since mercury in the Cd - Hg system is both a surface-active component and an element which causes resistance to corrosion (Ref 3) a passivation film forms quickly in this case. There are 3 figures, 1 table, and 3 Soviet references.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii, Kiyev (Institute of General and Inorganic Chemistry, Kiyev)

SUBMITTED: August 8, 1957

Card 3/3

SOV/76-33-3-27/41

5(4), 18(7)

AUTHORS: Gratsianskiy, N. N., Bogacheva, N. A.

TITLE: A Study of the Corrosion Resistance of Solid Metallic Solutions by the Method of Radiotracers. The System In-Pb (Issledovaniye korrozionnoy stoykosti tverdykh rastvorov metallov metodom radioaktivnykh izotopov. Sistema In-Pb)

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 3, pp 677 - 682 (USSR)

ABSTRACT: In the case of a successive removal of thin layers of a metal (or alloy) the method of radiotracers permits the determination of the action of a corrosive medium and the variation of the surface layer according to the individual parts (Refs 3-10). By this method the alloys Nr 1 Pb -24.01 At%, In - 75 At% and Nr2 Pb - 55.21 At%, In - 44.79 At% were investigated here using In^{114} and by means of the unit of the B type designed for measuring radioactivity. The depth of micropores was measured by "pressing" a $Rb^{x}Cl$ solution (in alcohol) "into the sample" at 125 atmospheres absolute pressure. 1% sulphuric acid solution served as a corrosion liquid, which acted in the sample for ten minutes, one hour, six hours, etc

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A Study of the Corrosion Resistance of Solid Metallic Solutions by the Method of Radiotracers. The System In-Pb

SOV/76-33-3-27/41

at room temperature. The depth of the micropores of pure indium amounted to 3 μ approximately before corrosion and up to 7 μ after corrosion, in the case of Pb it was about 2 μ before corrosion and 4 μ afterwards, in the case of nonresistant In-Pb alloys it was about 1 μ before corrosion and about 2,5 μ afterwards. Images of sample surfaces made by means of an electron microscope (Fig 1) that the porosity of the In-Pb surface and of the nonresistant alloy Nr 1 increases considerably after corrosion and remains almost unchanged in the case of Pb and the resistant alloy Nr2. If corrosion acts for six days, only In from the In-Pb solutions enters reaction and the surface is enriched with Pb. After twelve days a surface layer 2 μ thick is therefore produced from Pb, the In content increases up to a depth of 12 μ, and a composition according to that of the alloy is found above that point. The formation of the surface layer depends on the composition, the rate of dissolution of the unstable component, as well as on the rate of atomic rearrangement in the alloy. There are 3 figures and 15 references, 10 of which are Soviet.

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A Study of the Corrosion Resistance of Solid Metallic Solutions by the Method of Radiotracers. The System In-Pb SOV/76-33-3-27/41

ASSOCIATION: Institut obshchey i neorganicheskoy khimii, Kiyev (Institute of General and Organic Chemistry, Kiyev)

SUBMITTED: August 20, 1957

Card 3/3

SOV/76-33-5-7/33

5(4), 18(7)

AUTHORS: Gratsianskiy, N. N., Kalyuzhnaya, P. F. (Kiyev)

TITLE: Investigation of the Corrosion Resistance of Solid Solutions of Metals by the Method of Radioactive Isotopes (Issledovaniye korrozionnoy stoykosti tverdykh rastvorov metallov metodom radioaktivnykh izotopov).II. The System Mg-Cd (II. Sistema Mg-Cd)

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 5, pp 997 - 1001 (USSR)

ABSTRACT: A previous paper (Ref 1) dealt with the problem mentioned in the title in connection with indium-lead alloys. This paper reports on the results of investigations of two Mg-Cd alloys, namely alloy 1 (26.6 atm% Mg, 73.4 atm% Cd) and alloy 2 (74.5 atm% Mg, 25.5 atm% Cd). Cd^{115} was added while the alloys were melted. Rb^{86} was used in determining the depths of the micropores. The method of this determination is described in reference 1. The following observations were made with regard to the distribution of $Rb^{+}Cl^{-}$ in the surface pores of the metals Mg, Cd, and the Mg-Cd alloys; with Cd and Mg, $Rb^{+}Cl^{-}$ had penetrated to a depth of 1μ before the corrosion, with

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Cd to a depth of 3μ and with Mg of 5μ after the corrosion. With alloy 1 $Rb^{*}Cl$ penetrated to 1μ before the corrosion; the penetration depth remained unchanged after corrosion. With alloy 2 $Rb^{*}Cl$ penetrated to 2μ before corrosion, and to 4μ after corrosion. The isotope exchange between Cd, Mg-Cd alloys, and Cd ions in solution was investigated by means of the isotope Cd^{115}. The alloys were exposed to a jet of $CdSO_4$ solution with pH = 1.38 for 10 minutes. Then tin metal layers were taken-off of the samples by means of anodic dissolution at high current intensity, and the isotope quantity dissolved was measured by radiometry. Upon treatment with $CdSO_4$ solution isotope exchange with dissolved ions occurred on the surface only. No considerable change of the radioactivity of lower layers could be observed. The corrosion was carried out by means of 0.1 normal sulfuric acid. Figures 1 and 2 show the results of the radiometric investigation of alloy 1 and alloy 2 before and after corrosion. Before corrosion,

the cadmium is equally distributed in the crystal lattice of the alloy; increased Cd content is present to 1μ depth only; it is probably adsorbed on the surface of the micropores. After corrosion, the surface composition of the two alloys has changed. The first sector (depth: about 1μ) consists of Cd atoms which remained on the surface, or of Cd which was partially displaced from the solution by Mg ions. At a depth of from 3 - 10μ the Cd content is increased, probably because of diffusion from the surface; the lower layers are unchanged. The unstable alloy 2 has a looser surface; the looseness increases in the course of corrosion leaving either a loose crystal skeleton or causing the atoms to lose the connection and dissolve. There are 2 figures and 13 references, 11 of which are Soviet.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii Kiyev (Institute of General and Inorganic Chemistry Kiyev)

SUBMITTED: August 26, 1957

5 (4)
AUTHORS: Gratsianskiy, N. N., Ryabov, A. K. SOV/76-33-6-13/44

TITLE: Surface Phenomena in the Corrosion of Solid Metal Solutions (Poverkhnostnyye yavleniya pri korrozii tverdykh rastvorov metallov). The System In - Pb (Sistema In - Pb)

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 6, pp 1253-1255 (USSR)

ABSTRACT: In continuation of a previous paper (Ref 1) wherein the surface tension σ of the system Cd - Hg was determined, the present paper reports on the measurement of the value σ of the solid solution In - Pb as depending on the composition of the alloy. It further deals with the problem, which of the two components is the surface active factor at the boundary with a corrosion medium, and what kind of influence it exerts on the corrosion resistance of the alloy surface layer. Measurements of σ were made in a vacuum apparatus at temperatures 30-50° over the melting point of the alloy and of the specific weight γ in a special vessel (Ref 1). The values for σ and γ with different alloy compositions are given in a table. The value σ for pure In at 185° C amounts to 592 erg/cm^2, and for

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Surface Phenomena in the Corrosion of Solid Metal Solutions. The System In - Pb SOV/76-33-6-13/44

Pb at 362° = 455 erg/cm^2. It was observed that σ in the case of a content of 40-100 at% Pb changes but little (464-475 erg/cm^2); a marked change is observed with 30 at% Pb, the transition point of the β- to the γ-phase in the phase transformation diagram. From a content below 5 at% Pb σ rises up to the value for pure In. In the surface layer of the system In - Pb, at the boundary with a corrosion medium (citric acid), In is the surface-inactive component. The diffusion of the surface-active Pb to the boundary alloy - corrosion medium effects the formation of an anticorrosive lead layer or of the In-Pb alloy. There are 1 figure, 1 table, and 4 Soviet references.

ASSOCIATION: Akademiya nauk USSR, Institut obshchey i neorganicheskoy khimii Kiyev (Academy of Sciences of the UkrSSR, Institute of General and Inorganic Chemistry, Kiyev)

SUBMITTED: October 28, 1957

Card 2/2

87510

18.8300

S/073/60/026/001/008/021
B004/B054

AUTHORS: Gratsianskiy, N. N. and Kalyuzhnaya, P. F.

TITLE: Study of Corrosion Resistance of Solid Metal Solutions of the System Fe - Cr

PERIODICAL: Ukrainskiy khimicheskiy zhurnal, 1960, Vol. 26, No. 1, pp. 53-57

TEXT: The authors attempted to find the cause of the formation of corrosion-resisting regions in solid alloys of the components Fe and Cr, both of which are subject to corrosion. They investigated the following components: No. 1, Armco iron; No.2, chromium with Fe traces; No.3, 47.34 atom% Fe, 52.52 at% Cr; No.4, 79.71 at% Fe, 20.1 at% Cr; and No.5, 86.1 at% Fe, 13.60 at% Cr. Corrosion was conducted in 5% HCl, 5% H_2SO_4, 5% Na_2SO_4 solution, and 3% NaCl solution at 20°C for 180 hours, and the loss in weight of the specimens due to corrosion was determined: Table 1, corrosion losses, $g/m^2,h$

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Study of Corrosion Resistance of Solid Metal Solutions of the System Fe - Cr

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No. of specimen	5% H_2SO_4	5% HCl	5% Na_2SO_4	3% NaCl
3	0.0	127.0	0.0	0.0
4	10.7	8.2	0.008	0.05
5	3.74	8.91	0.012	0.05

The stability of sample No. 3 in H_2SO_4 was confirmed by measuring the potential. A potential jump occurs at a chromium content of about 50% (Fig. 1). A 3-4 μ thick layer of the corroded specimens was electrolytically dissolved, analyzed, and its composition compared with the solution obtained by corrosion. In 5% HCl, the components dissolve at the ratio at which they are present in the alloy. In 5% H_2SO_4, a corrosion-resisting layer is formed on the surface of the alloy, which corresponds to the σ phase whose basis is the FeCr compound. The thickness of this layer is 1 μ. N. N. Kurnakov, N. I. Korenev, I. I. Kornilov, and V. S. Mikheyev are mentioned. There are 2 figures, 3 tables, and 5 references: 4 Soviet and 1 German.

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87510

Study of Corrosion Resistance of Solid Metal Solutions of the System Fe - Cr

S/073/60/026/001/008/021
B004/B054

ASSOCIATION: Institut obshchey i neorganicheskoy khimii AN USSR (Institute of General and Inorganic Chemistry AS UkrSSR)

SUBMITTED: July 31, 1958

Legend to Fig. 1: a) atom%, b) potential, v; 1: in 5% H_2SO_4; 2: in 5% HCl

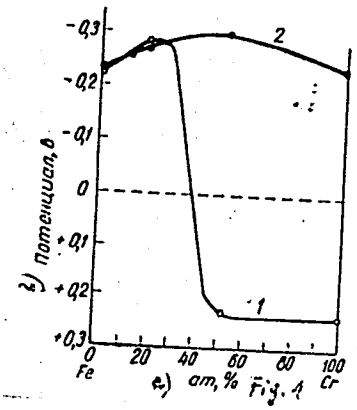

Fig. 4

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S/073/60/026/002/009/015
B023/B067

AUTHORS: Gratsianskiy, N. N. and Ryabov, A. K.

TITLE: Study of the Corrosion Resistance of Solid Solutions of Metals of the Nickel - Chromium System

PERIODICAL: Ukrainskiy khimicheskiy zhurnal, 1960, Vol. 26, No. 2, pp. 201-205

TEXT: The authors attempted to determine the limits of corrosion resistance of metals of the nickel-chromium system in numerous corroding solutions, and to explain the reasons of the strong changes in the corrosion resistance of melts in connection with the changes of the composition. Corrosion resistance was studied in the following solutions: 5% HCl, H_2SO_4, Na_2SO_4, 3% NaCl at 20°C during 300 h. In H_2SO_4, Na_2SO_4, and NaCl all melts proved to be corrosion resistant with all relationships of the components. In the 5% HCl solution the corrosion losses are rapidly changed with a nickel content of about 10%. With a nickel content exceeding 10% in 5% HCl solution an approximately 0.2μ thick corrosion

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resistant surface layer of pure nickel is formed. On the phase diagram of the nickel - chromium system the development of limits of corrosion resistance in a 5% HCl solution corresponds to the transition from the α-phase to the $\alpha+\beta$-phase. Fig. 1 shows the dependence of the corrosion losses in 5% HCl solution on the composition of the melt. Table 1 gives investigation results concerning the losses in weight in 5% HCl. Table 2 shows the results of the analysis of solutions after corrosion in 5% HCl:

Table 2 corrosion of Ni-Cr alloys in 5% HCl

alloy No.		5	6	7	8	9	10
dissolved at %	Ni	traces	traces	traces	2.8	0.1	0.2
	Cr	99.92	99.94	99.95	97.2	99.9	99.8

alloy 5 23.0 at% Ni,
- " - 6 18.1 - " -
- " - 7 13.8 - " -
- " - 8 8.95 - " -
- " - 9 3.97 - " -
- " -10 1.36 - " -

There are 2 figures, 2 tables, and 2 Soviet references.

Study of the Corrosion Resistance of Solid Solutions of Metals of the Nickel - Chromium System

S/073/60/026/002/009/015
B023/B067

ASSOCIATION: Institut obshchey i neorganicheskoy khimii AN USSR (Institute of General and Inorganic Chemistry of the Academy of Sciences UkrSSR)

SUBMITTED: July 31, 1958

Card 3/3

S/073/60/026/003/003/004
B016/B054

AUTHORS: Gratsianskiy, N. N., and Kalyuzhnaya, P. F.

TITLE: Investigation of the Resistance to Corrosion of Solid Solutions of Metals of the System Fe - Ni - Cr

PERIODICAL: Ukrainskiy khimicheskiy zhurnal, 1960, Vol. 26, No. 3, pp. 324 - 326

TEXT: The authors wanted to find the limit of resistance to corrosion of alloys of the system Fe - Ni - Cr and also to determine the composition and thickness of the surface layer of the alloys, which forms due to corrosion of the solid metal solutions. Alloys with varying content of the individual components and pure nickel were used. They were ground, and tempered for 6 h in an argon atmosphere at 1150°C. The samples 2, 3, and 4 were subsequently hardened. Corrosion was gravimetrically examined. The alloys were exposed to 5% solutions of H_2SO_4, HCl, and Na_2SO_4, as well as to a 3% NaCl solution at 20°C for 200 h. In Na_2SO_4 and NaCl, the alloys showed only small losses in weight. The limit of resistance

to corrosion cannot be established in these salt solutions within 200 h. Fig. 1 shows the results obtained in H_2SO_4 and HCl. The authors found that in 5% solutions of these acids the loss in weight due to corrosion is reduced rapidly in alloy 3 (20.43% of Cr, 9.77% of Ni). A limitation of the resistance to corrosion was observed in the ternary alloys of the system Fe - Ni - Cr in a range corresponding to the transition from the α- to the γ-phase. The authors measured, at the same time, the potentials of the corrodible alloys. Fig. 2 shows the stabilized potentials as a function of alloy composition. A sudden jump in the direction of positive potential values, depending on the alloy composition, is observed in the range corresponding to the α-γ phase transition, which again confirms the existence of a limit of resistance to corrosion. The authors dissolved thin layers in 5% H_2SO_4 at high current densities for 1-2 sec (Table 1) to determine the surface layer (thickness and composition) forming due to the action of the solution on the alloy surface. The results show that the surface layer is slightly enriched with nickel in the little resistant alloys. This layer remains nearly

unchanged in resistant alloys. In the latter case, the ratio of components corresponds to that in the alloy. The authors analyzed the corrosion solutions to determine the amounts of components which, during corrosion, passed over from the alloy surface into the solutions. Table 2 shows that in nonresistant alloys the ratio $Fe_{sol} : Ni_{sol}$ is higher than the ratio Fe:Ni in the alloy. From the resistant alloys 3, the components pass over into the solution in such amounts as correspond to their content in the alloy. Microhardness measurements showed that nearly no loosening of the surface layer takes place in resistant alloys. The authors therefrom conclude that the limit of resistance to corrosion originates at a Cr content of 18% and a Ni content of 8%, and is explained by the nature of the γ-phase. The cause of the origin of this limit cannot be explained from the standpoint of the Tamman theory (Ref. 3). There are 2 figures, 2 tables, and 3 references: 2 Soviet and 1 German.

Investigation of the Resistance to Corrosion of Solid Solutions of Metals of the System Fe - Ni - Cr

S/073/60/026/003/003/004
B016/B054

ASSOCIATION: Institut obshchey i neorganicheskoy khimii AN USSR (Institute of General and Inorganic Chemistry of the AS UkrSSR)

SUBMITTED: July 31, 1958

Card 4/4

24651
S/076/61/035/006/001/013
B127/B203

18 8300

AUTHORS: Gratsianskiy, N. N. and Vdovenko, I. D.

TITLE: Formation of lead sulfate films on an In-Pb alloy during corrosion in sulfuric acid solution

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 6, 1961, 1208 - 1211

TEXT: The authors describe the treatment of an In-Pb alloy with 1% sulfuric acid. The alloy was obtained from chemically pure lead and indium fused together in vacuum, the mixing ratio was 55 atom% lead : 45 atom% indium. A resistant layer was found to form on the alloy surface due to the deposition of poorly soluble corrosion products in the form of lead sulfate. The object of the present paper was a study of the formation process of this layer. The formation of the film was observed with the aid of S^{35} in sulfuric acid ($H_2S^{35}O_4$). The activity of the film was measured with an MCT-17(MST-17) Geiger counter. It was observed that the layer grew rapidly at the beginning, but the rate of growth decreased more and more until it

Card 1/2

PUSTOVIT, V.T.; GRATSIANSKIY, N.N., kand.tekhn.nauk

Studying the polarization of electrodes during the electrolytic forming of Pb-Tl alloys. Met.i gornorud.prom. no.5:70-72 S-O '62. (MIRA 16:1)

(Lead-thallium alloys--Electrometallurgy)
(Polarization (Electricity))

GRATSIANSKIY, N. N.

S/185/62/007/010/011/020
D234/D308

AUTHORS: Hratsians'kyy, M. M., Vdovenko, I. D. and Baturyns'ka, N. L.

TITLE: Formation and structure of corrosion surface layers in In-Pb and Fe-Ni alloys

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 7, no. 10, 1962, 1118-1123

TEXT: The layers were studied by the x ray method, using characteristic Fe wavelengths 1.9321 Kx and 1.7514 Kx, on both rotating and fixed samples. Corrosion unstable in In-Pb has a layer of $PbSO_4$ on the surface, a thin layer of nearly pure Pb below it, and finally a solid, Pb-enriched In-Pb solution. Up to the depth of 2 microns two cubic lattices are observed. Corrosion-stable In-Pb possesses similar surface layers. In Fe-Ni alloys lattice parameters do not change and new lines do not appear. Stable alloys exhibit the Ni lattice and unstable alloys the Fe lattice. Thickness and composition of the layers were studied in previous papers by

Formation and structure ... S/185/62/007/010/011/020
D234/D308

the first of the authors et al. There are 2 figures and 2 tables.

ASSOCIATION: Instytut zahalnoyi ta neorhanichnoyi khimiyi AN URSR, Kyyiv (Institute of General and Inorganic Chemistry AS UkrSSR, Kiev)

SUBMITTED: March 31, 1962

Card 2/2

S/073/62/028/008/002/002
A057/A126

AUTHORS: Vdovenko, I. D., Gratsianskiy, N. N.

TITLE: The effect of surface-active substances upon the corrosion of indium, tin, and indium-tin alloys

PERIODICAL: Ukrainskiy khimicheskiy zhurnal, v. 28, no. 8, 1962, 991 - 995

TEXT: The effect of adding small quantities (0.094 resp. 0.265 g/l) of mixtures of heptyl and octyl amine, of decyl and dodecyl amine, and of octyl amine on the corrosion of indium, tin, and their alloys (50% In, or 20% In) was investigated in 60% sulfuric acid solutions by the method of cathodic and anodic polarization curves. These admixtures caused a shift of the cathodic polarization curves towards negative potentials. The shift of potentials is explained by a decrease in the rate of the cathodic reaction, i.e. an increase of the overvoltage of the hydrogen ion discharge. This is due to the formation of dense adsorbed layers of the surface-active organic compounds on the surface of the electrode. Corrosion inhibitors with a specific adsorption on the metal surface show the greatest effect when the potential of the electrochemical reaction is

Card 1/2

VDOVENKO, I.D.; GRATSIANSKIY, N.N.

Corrosion resistance of indium, tin, and indium-tin alloys in the presence of surface-active agents. Ukr.khim.zhur. 28 no.9:1069-1072 '62. (MIRA 15:12)

1. Institut obshchey i neorganicheskoy khimii AN UkrSSR.
(Indium-tin alloys--Corrosion)
(Surface-active agents)